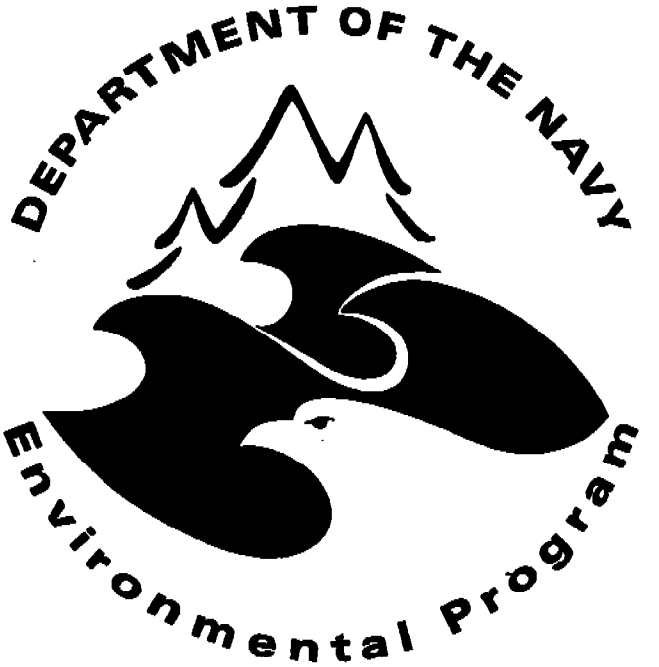
12.04-05/01/98-00297

Environmental Restoration Terms and Acronyms



Edited by

Kelly Greaser
Environmental Restoration Program Manager
Environmental Quality Division
Naval Amphibious Base Little Creek
Norfolk, VA

May 1998

Preface
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Disclaimer

This document is provided to help the public understand the technical nature of the Navy's Environmental Restoration (ER) Program. It contains definitions and acronyms that may be encountered when reading documents or other information related to restoration activities. A variety of sources including Environmental Protection Agency (EPA) Publications; Virginia Department of Environmental Quality (DEQ) Publications; various federal laws; as well as various Department of Defense and Energy Documents, Publications, and Training Manuals were used as sources. However, definitions contained herein should not be construed to in any way alter or supplant any federal or state law or regulation. Although compiled in good faith, the Department of the Navy encourages the reader not to rely on the terms as authoritative, but for informational purposes only, and therefore assumes no responsibility for the accuracy of the contents contained herein. Readers are cautioned to use the document at their own risk.

To assist the largest number of people as possible, this document may be reproduced, as long as the source, and this disclaimer are disclosed. Also, this compilation was prepared for use in Virginia. Therefore, it may be helpful for the user to add definitions and acronyms specific to their region.

Insights, additions and suggested improvements are solicited and encouraged.

Kelly Greaser
Editor

Terms

A

Abandoned Well - A well whose use has been permanently discontinued or which is in a state of such disrepair that it cannot be used for its intended purpose.

Abatement - Reducing the degree or intensity of, or eliminating, pollution.

Abiotic - Not relating to living things, not alive.

Absorbance - A measure of the decrease in incident light passing through a sample into a detector. It is defined mathematically as: $A = \frac{I\ (solvent)}{I\ (solution)} = \log \frac{Io}{I}$

where I = radiation intensity

Absorbed Dose - The amount of a chemical that enters the body of an exposed organism. Equal to intake multiplied by an absorption factor.

Absorption - 1) The process by which one substance is taken into the body of another substance. 2) The penetration of molecules or ions of one or more substances (gas, liquid or solid) into the interior of another substance. For example, in hydrated bentonite (a type of clay), the water that is held between the mica-like layers (held within the clay) is the result of absorption.

Accelerated Operable Unit (AOU) - An action which prevents, controls or responds to a release or threatened release of hazardous substances, pollutants, and contaminants where prompt action is necessary but a response under removal authorities is not appropriate or desirable. The purpose of an AOU is to allow the remedial action for that Operable Unit to proceed prior to completion of the final Record of Decision (ROD) for the total remedial action. AOUs are particularly appropriate where the size and complexity of the total remedial action would seriously delay implementation of independent parts of the action. AOUs will only proceed after complying with applicable procedures in the NCP. It is not intended that AOUs diminish the requirements for, delay the conduct of, or conflict with the total remedial action.

Accident Site - The location of an unexpected occurrence, failure or loss, either at a plant or along a transportation route, resulting in a release of hazardous materials.

Accuracy - The degree of agreement between a measured value and a true, expected value.

Acetone - A colorless, volatile liquid with a sweet odor. It is considered the least toxic solvent in industry. It can occur naturally. It is used in the production of lubricating oils, chloroform, pharmaceuticals, pesticides, paints, varnishes and lacquers. If present in water, it is more likely to volatilize or biodegrade before bioaccumulating or adsorbing to sediments. Acetone will also readily volatilize and biodegrade in soil. It is also a common laboratory contaminant, so its presence in a sample does not always indicate its presence in the environment. Synonyms - Dimethylketone and 2-propanone.

Acid - An inorganic or organic compound that 1) reacts with metals to yield hydrogen; 2) reacts with a base to form a salt; 3) dissociates in water to yield hydrogen ions; 4) has a pH of less than 7.0; 5) neutralizes bases or alkalis; and 6) turns litmus paper red. All acids contain hydrogen. They are corrosive to tissue and should be handled with care.

Acid Neutralizing Capacity - A measure of the ability of water or soil to resist changes in pH.

Acidic - The condition of water or soil that contains a sufficient amount of acid substances to lower the pH below 7.0

Action Level (AL) - 1) In the Superfund program, the existence of a contaminant concentration in the environment high enough to warrant action or trigger a response under SARA and the NCP. 2) Regulatory levels recommended by EPA for enforcement by FDA and USDA when pesticide residues occur in food or feed commodities for reasons other than the direct application of the pesticide. As opposed to "tolerances" which are established for residues occurring as a direct result of proper usage, action levels are set for inadvertent residues resulting from previous legal use or accidental contamination. 3) Unless otherwise specified in a NAVOSH standard, one-half the relevant Permissible Exposure Limit (PEL) or Threshold Limit Value (TLV). See Tolerances.

Activated Carbon - A highly adsorbent form of carbon used to remove odors and toxic substances from liquid or gaseous emissions. In waste treatment it is used to remove dissolved organic matter from waste water. It is also used in motor vehicle evaporative control systems.

Acute Exposure - A single exposure to a toxic substance which results in severe biological harm or death. Acute exposures are usually characterized as lasting no longer than a day, as compared to longer, continuing exposure over a period of time.

Acute Toxicity - The ability of a substance to cause poisonous effects resulting in severe biological harm

or death soon after a single exposure or dose, usually within 24 hours. Also, any severe poisonous effect resulting from a single short-term exposure to a toxic substance. See Chronic Toxicity, Toxicity.

Adaptation - Changes in an organism's structure or habits that help it adjust to its surroundings.

Adjacent Property - Either those properties contiguous to the boundaries of the property being surveyed or other nearby properties.

Administrative Order - A legal document signed by EPA directing an individual, business, or other entity to take corrective action or refrain from an activity. It describes the violations and actions to be taken, and can be enforced in court. Such orders may be issued, for example, as a result of an administrative complaint whereby the respondent is ordered to pay a penalty for violations of a statute.

Administrative Order On Consent - A legal agreement signed by EPA and an individual, business, or other entity through which the violator agrees to pay for correction of violations, take the required corrective or cleanup actions, or refrain from an activity. It describes the actions to be taken, may be subject to a comment period, applies to civil actions, and can be enforced in court.

Administrative Record (AR) - A compilation of information established for all CERCLA sites made available to the public at the start of the Remedial Investigation (RI) for remedial actions, or at the time of Engineering Evaluation/Cost Analysis (EE/CA) for removal actions. Information in the Administrative Record supports the selected remedy for remedial actions and removal actions.

Administrative Record File (ARF) - 1) Refers to documents, as they are being established and maintained. Until a response action decision has been selected, there is no complete administrative record for that decision. Thus, to avoid creating the impression that the record is complete at any time prior to the final selection decision, the set of documents is referred to as the ARF rather than the AR. 2) A file that contains all information used in order to make decisions on the selection of a response action under CERCLA. Available for public review and comment.

Adsorption - The process by which a gas, vapor, dissolved material or very small particle adheres to the surface of a solid due to chemical or physical forces; the attraction and adhesion of ions from an aqueous solution to the solid soil or rock surfaces with which they are in contact.

Advection - The transport of dissolved contaminants by the bulk movement of groundwater flow; the main process driving the movement of dissolved contaminants.

Advisory - A non-regulatory document that communicates risk information to those who may have to make risk management decisions.

Aeration - A process of supplying or introducing air/oxygen into a medium which promotes biological degradation of organic matter in water. The process may be passive (as when waste is exposed to air), or active (as when a mixing or bubbling device introduces the air).

Aeration Tank - A chamber used to inject air into water.

Aerobe - Bacteria that use oxygen as an electron acceptor.

Aerobic - Life or processes that require, or are not destroyed by, the presence of oxygen. See Anaerobic.

Aerobic Treatment - Process by which microbes decompose complex organic compounds in the presence of oxygen and use the liberated energy for reproduction and growth. Such processes include extended aeration, trickling filtration, and rotating biological contactors.

Affected Public - The people who live and/or work near a hazardous waste site.

Affinity - A chemical attraction or force that causes the atoms of certain elements or compounds to combine with atoms of another element or compound and remain in the combined state.

Air Changes per Hour (ACH) - The movement of a volume of air in a given period of time; if a house has one air change per hour, it means that all of the air in the house will be replaced in a one-hour period.

Air Purification Devices - Respirators or filtration devices which remove particulate matter, gases, or vapors from the atmosphere. These devices range from full face piece, dual cartridge masks with eye protection, to half-mask face piece, mounted cartridges with no eye protection.

Air Sparging - General term for the technology of introducing gases, usually air, beneath the water table to promote site remediation. Air sparging can be divided into two distinct processes: in-well aeration and air injection.

Air Stripping - A treatment system that removes volatile organic compounds (VOCs) from contaminated groundwater or surface water by forcing an airstream through the water and causing the compounds to volatilize to the airsteam, enabling separation of the compounds from the water and possible further treatment of the airstream.

Algae - Simple rootless plants that grow in sunlit waters, on rocks and in soil, in proportion to the amount of available nutrients. They can affect water quality adversely by lowering the dissolved oxygen in the

water. They are food for fish and small aquatic animals.

Aliphatic Hydrocarbon - A compound built from carbon and hydrogen atoms joined in a linear chain. Petroleum products are composed primarily of aliphatic hydrocarbons.

Aliquot - A measured portion of a sample taken for analysis.

Alkali - Any compound having highly basic properties; i.e., one that readily ionizes in aqueous solution to yield OH anions, with a pH above 7.0, and turns litmus paper blue. Examples are oxides and hydroxides of certain metals belonging to group IA of the periodic table (Li, Na, K, Rb, Cs, Fr). Ammonia and amines may also be alkaline. Alkalis are caustic and dissolve tissue. Treat alkali burns by quickly washing with large amounts of water for at least 15 minutes. Common commercial alkalis are sodium carbonate (soda ash), caustic soda and caustic potash, lime, lye, waterglass, regular mortar, portland cement, and bicarbonate of soda.

Alkaline - The condition of water or soil which contains a sufficient amount of alkali substances to raise the pH above 7.0.

Alkalinity - The capacity of water to neutralize acids.

Alluvial - Relating to mud and/or sand deposited by flowing water.

Alternative Fuels - Substitutes for traditional liquid, oil-derived motor vehicle fuels like gasoline and diesel. Includes methanol, ethanol, compressed natural gas, and others.

Alternative Technology - An approach that aims to use resources efficiently or to substitute resources in order to do minimum damage to the environment. This approach permits a large degree of personal user control over the technology.

Aluminum (Al) - A light ductile metal that is easy to weld. It is a good conductor of heat and electricity. When it is exposed to air, it creates a protective film resistant to corrosion. It is used in alloys with copper, zinc, manganese and magnesium. It is a very versatile metal and so has a wide variety of uses: packaging materials, utensils, auto-bodies, airplanes, building materials, electrical conductors, explosives, fireworks, abrasives, cosmetics, paints, and even food additives. It is a natural component in soil, water, and air. Inhalation of the fine powder can lead to pulmonary fibrosis.

Ambient - Usual or natural surrounding conditions, e.g., ambient temperature - the natural, uninfluenced temperature of the surroundings.

Anabolism - The process whereby energy is used to build organic compounds, such as enzymes and nucleic acids, that are necessary for life functions.

Anadromous - Fish that spend their adult life in the sea but swim upriver to freshwater spawning grounds to reproduce.

Anaerobic - A life or process that occurs in, or is not destroyed by, the absence of oxygen.

Anaerobic Decomposition - Reduction of the net energy level and change in chemical composition of organic matter caused by microorganisms in an oxygen free environment.

Analytes - The chemicals for which a sample is analyzed.

Analytical Method - Defines the sample preparation and instrumentation procedures or steps that must be performed to estimate the quantity of analyte in a sample.

Animal Studies - Investigations using animals as surrogates for humans with the expectation that the results are pertinent to humans.

Anion Exchange Capacity - A quantitative measure of surface charge of an anion reported in equivalents of exchangeable ions per unit weight of the solid.

Anisotropic / Anisotropy - Having different properties in different directions. See isotropic.

Antagonism - 1) Interference or inhibition of the effect of one chemical by the action of another. 2) An interaction of two or more chemicals which results in an effect that is less than the sum of their effects taken independently.

Anthropogenic - Of or relating to humans or the era of human life. Man-made.

Anthropomorphic - Ascribing human motivation, characteristics, or behavior to inanimate objects, animals, or natural phenomena.

Anti-Degradation Clause - Part of federal air and water quality requirements prohibiting deterioration where pollution levels are above the legal limit.

Applicable or Relevant and Appropriate Requirement (ARAR) - Requirements, including cleanup standards, standards of control and other substantive environmental protection requirements and criteria, for hazardous substances as specified under Federal and state laws and regulations, that must be met when complying with CERCLA and SARA.

Aqueous - Something made up of, similar to, or containing water; watery.

Aquiclude - A saturated geologic unit that is incapable of transmitting significant quantities of water under ordinary hydraulic gradients.

Aquifer - A saturated, permeable geologic formation or structure that is capable of yielding water in usable quantities under ordinary hydraulic gradients.

Aquitard - The less permeable beds in a stratigraphic sequence; beds may be permeable enough to transmit water in quantities that are significant in the study of regional groundwater flow or environmental

contamination, but their permeability is not sufficient to allow completion of production wells within them.

Area of Concern (AOC) - A discrete area of contamination or suspected contamination that is in the PA/SI (or RFA) phase and that has not been entered into the DOD RMIS database.

Aromatic - A class of hydrocarbons consisting of cyclic conjugate carbon atoms, such as benzene or toluene, commonly added to gasoline in order to increase octane. Some aromatics are toxic.

Arsenic (Ar) - A metalloid occurring naturally in the earth's crust and fossil fuels. It can be released into the environment during combustion of fossil fuels containing arsenic. It is used in the production of glass, enamels, ceramics, oil, cloth, linoleum, electrical semiconductors, pigments, fireworks, pesticides, fungicides, veterinary pharmaceuticals, and wood preservatives. Soluble forms of arsenic can be quite mobile, while less soluble forms tend to adsorb to sediments and soils. It is a known human carcinogen, and bioaccumulates to toxic levels.

Artesian Aquifer - A confined aquifer in which groundwater rises in a well above the point at which it is naturally found in the aquifer, due to artesian pressure.

Asbestos - A mineral fiber that can pollute air or water and cause cancer or asbestosis when inhaled. EPA has banned or severely restricted its use in manufacturing and construction.

Ash - The mineral content of a product remaining after complete combustion.

Assessment Endpoint - Environmental characteristics, which, if they were found to be significantly affected, would indicate a need for remediation (e.g., decrease in sports fisheries).

Assimilative Capacity - The capacity of a natural body of water to receive wastewaters or toxic materials without deleterious effects and without damage to aquatic life or humans who consume the water.

Atmosphere-Supplying Devices - Respiratory protection devices coupled to an air source. The two types are Self-Contained Breathing Apparatus (SCBA) and supplied air respirators (airline).

Attenuation - The process by which a compound is reduced in concentration with distance and time through absorption, adsorption, degradation, dilution, diffusion, dispersion, and/or chemical or biological transformation.

Autochthonous - A term applied to rocks of which the dominant constituents have been formed in the natural or original position as opposed to prior erosion and disposition.

Autotrophic - An organism that produces food from inorganic substances, e.g. photosynthetic plants.

B

Background Correction - In data analysis, a technique to compensate for variable background contribution to the instrument signal and the determination of trace metals.

Background Level - 1) Naturally occurring levels: ambient concentrations of chemicals present in the environment that have not been influenced by humans; 2) Anthropogenic levels: concentrations of chemicals that are present in the environment due to human-made, non-site sources.

Backwashing - Reversing the flow of water back through the filter media to remove the entrapped solids.

Bacteria - (Singular: bacterium) Microscopic living organisms ubiquitous in the environment, that can aid in pollution control by metabolizing organic matter in sewage, oil spills or other pollutants. However, bacteria in soil, water or air can also cause human, animal and plant health problems.

Baghouse Filter - Large fabric bag, usually made of glass fibers, used to eliminate intermediate and large (greater than 20 microns in diameter) particles. This device operates like the bag of an electric vacuum cleaner, passing the air and smaller particles while entrapping the larger ones.

Bailer - A long pipe with a valve at the lower end, used to remove slurry from the bottom or side of a well as it is being drilled or to obtain a water sample from a developed well.

Barium (Ba) - The heaviest of the stable alkaline earths, it is a soft, silver-grey metal. It is used in various alloys, paints, soap, paper, rubber, ceramics, glass, insecticides, oil and gas well drilling muds, fireworks, lubricating oil, and steel hardening. It is naturally abundant in nature and is found in plant and animal tissue. Ingestion of barium or some of its compounds can cause muscular problems, and it can accumulate in the skeleton.

Barrier Coating(s) - A layer of a material that obstructs or prevents passage of something through a surface that is to be protected, e.g. grout, caulk, or various sealing compounds; sometimes used with polyurethane membranes to prevent corrosion or oxidation of metal surfaces, chemical impacts on various materials, or, for example, to prevent radon infiltration through walls, cracks, or joints in a house.

Base - Substances that (usually) liberate OH anions when dissolved in water. Bases 1) react with acids to form

salts; 2) have a pH greater than 7.0; 3) turn litmus paper blue; and 4) may be corrosive to tissue. A strong base is called alkaline or caustic. Examples are lye and DRANO.

Base Neutral Acid Compound (BNA) - See Semi-Volatile Organic Compound (SVOC).

Base Realignment And Closure (BRAC) - Refers to policy, procedures, authorities, and responsibilities for closing or realigning military installations across the Department of Defense. Includes environmental restoration activities.

Baseline Risk Assessment - An analysis of the potential adverse health effects (current or future) caused by contaminant releases from a site in the absence of any actions to control or mitigate these releases. According to EPA, the baseline risk assessment can be used to determine whether: 1) A release or threatened release poses an unacceptable risk to human health or the environment that warrants remedial action, and 2) A site presents an imminent and substantial endangerment. The primary purpose is to provide risk managers with an understanding of the actual and potential risks to human health and the environment posed by the site and the uncertainties associated with the assessment.

Bed Load - Sediment particles resting on or near the channel bottom that are pushed or rolled along by the flow of water.

Bedrock - Any solid rocks exposed at the surface or overlain by unconsolidated materials.

Bench-scale Tests - Laboratory testing of potential cleanup technologies. Contaminated media from the site are generally used to determine the applicability of a technology to a specific site. See Pilot Tests and Treatability Studies.

Benthic Organism (Benthos) - A form of aquatic plant or animal life that is found on or near the bottom of a stream, lake, ocean or other water body.

Benthic Region - The bottom layer of a body of water.

Bentonite - Clay made of decomposed volcanic ash which is used to seal wells (hole plug).

Beryllium (Be) - A greyish-white metal occurring naturally in certain rocks, soils and volcanic dust. A major emission source to the environment is through the fly ash from combustion of coal and fuel oil, which can contain the metal. It is used in nuclear reactors, radio and television tubes, fluorescent tubes and powders. It is discharged by machine shops, ceramic and propellant plants, and foundries. In the environment, it ultimately accumulates in sediments. Beryllium can cause severe dermatitis problems and can be toxic if inhaled. It is a Group B2, animal carcinogen

Best Demonstrated Available Technology (BDAT) - As identified by EPA, the most effective, commercially available means of treating specific types of hazardous waste. The BDATs may change with advances in treatment technologies.

Best Management Practice (BMP) - Methods that have been determined to be the most effective, practical means of preventing or reducing pollution from nonpoint sources.

Bias - Consistent deviation of measured values from the true value, caused by systematic errors in a procedure.

Bicarbonates - Metal + HCO_3, e.g. $NaHCO_3$. Can raise the pH to a high concentration which may be corrosive.

Bioaccumulants - Substances that increase in concentration in living organisms as they take in contaminated air, water, or food because the substances are very slowly metabolized or excreted. See Biological Magnification.

Bioassay - Study of living organisms to measure the effect of a substance, factor, or condition by comparing before-and-after exposure or other data.

Bioaugmentation - The addition of microbe cultures to groundwater or soil to enhance biodegradation.

Bioavailability - A general term to describe the accessibility of contaminants to ecological populations. Bioavailability consists of: 1) a physical aspect related to phase distribution and mass transfer, and 2) a physiological aspect related to the suitability of the contaminant as a substrate.

Biobarrier - An In Situ remediation technology consisting of a trench filled with biological medium to encourage the growth of bacteria capable of degrading contaminants.

Biochemical Oxygen Demand (BOD) - A measure of the amount of oxygen consumed in the biological processes that break down organic matter in water. The greater the BOD, the greater the degree of pollution.

Bioconcentration - The accumulation of a chemical in tissues of an organism (such as a fish) to levels greater than in the surrounding medium in which the organism lives.

Bioconcentration Factor (BCF) - Provides a measure of the extent of chemical partitioning at equilibrium between biological medium such as fish tissue or plant tissue and an external medium such as water. The higher the BCF, the greater the accumulation in living tissue is likely to be.

Biodegradable - Capable of decomposing under natural conditions.

Biodegradation - 1) The reduction in concentration of a chemical or physical agent through naturally

occurring microbial activity. 2) The process of an organic molecule becoming transformed by biological means.

Biodegradation Rate - The mass of contaminant metabolized by microorganisms per unit time. In soil contamination this is normalized to the mass of soil and usually is expressed as mg contaminant degraded/kg soil/day (mg/kg/day).

Biodiversity - Refers to the variety and variability among living organisms and the ecological complexes in which they occur. Diversity can be defined as the number of different items and their relative frequencies. For biological diversity, these items are organized at many levels, ranging from complete ecosystems to the biochemical structures that are the molecular basis of heredity. Thus, the term encompasses different ecosystem, species, and genes.

Biological Additive - Microbiological cultures, enzymes, or nutrient additives that are deliberately introduced into a discharge for the specific purpose of encouraging biodegradation to mitigate the effects of the discharge.

Biological Magnification - Refers to the process whereby certain substances such as pesticides or heavy metals move up the food chain, work their way into rivers or lakes, and are eaten by aquatic organisms such as fish, which in turn are eaten by large birds, animals or humans. The substances become concentrated in tissues or internal organs as they move up the chain. See Bioaccumulants.

Biological Oxidation - Decomposition of complex organic materials by microorganisms. Occurs in self-purification of water bodies and in activated sludge wastewater treatment.

Biological Oxygen Demand (BOD) - An indirect measure of the concentration of biologically degradable material present in organic wastes. It usually reflects the amount of oxygen consumed in five days by biological processes breaking down organic waste.

Biological Treatment - A treatment technology that uses bacteria to consume waste.

Biomass - All of the living material in a given area; often refers to vegetation.

Biome - The entire community of living organisms in a single major ecological area. See Biotic Community.

Biomonitoring - 1) The use of living organisms to test the suitability of effluents for discharge into receiving waters and to test the quality of such waters downstream from the discharge. 2) Analysis of blood, urine, tissues, etc., to measure chemical exposure in humans or animals.

Biopile - Soil pile constructed to allow aerobic bioremediation by aeration, possibly supplemented with water and nutrients.

Bioreactor - A container or area in which a biological reaction or biological activity takes place.

Bioreclamation - The process of making a contaminated site usable again through biological processes.

Bioremediation - 1) Use of living organisms to clean up oil spills or remove other pollutants from soil, groundwater, or wastewater. 2) Use of organisms such as non-harmful insects to remove agricultural pests or counteract diseases of trees, plants, and garden soil.

Bioslurping - A technology application that teams vacuum-assisted free-product recovery with bioventing to simultaneously recover free product and remediate the vadose zone.

Biosphere - The portion of Earth and its atmosphere that can support life.

Biota - The animal and plant life of a given region.

Biotechnology - Techniques that use living organisms or parts of organisms to produce a variety of products (from medicines to industrial enzymes) to improve plants or animals or to develop microorganisms to remove toxic compounds from bodies of water, or act as pesticides.

Biotic Community - A naturally occurring assemblage of plants and animals that live in the same environment and are mutually sustaining and interdependent. See Biome.

Biotransformation - Conversion of a substance into other compounds by organisms; includes biodegradation.

Bioventing - The process of aerating vadose zone soils by means of installed vents to stimulate in situ biological activity and optimize biodegradation of organic compounds with some volatilization occurring.

Blank - An artificial sample designed to monitor the introduction of artifacts into the sampling and analytical process. For aqueous samples, reagent water is used as a blank matrix; however, a universal blank matrix does not exist for solid samples, but sometimes clean sand is used as a blank matrix. The blank is taken through all appropriate steps of the process. A reagent blank is an aliquot of analyte-free water or solvent analyzed with the analytical batch. Field blanks are aliquots of analyte-free water or solvents brought to the field in sealed containers and transported back to the laboratory with the sample containers. Trip blanks and equipment blanks are two specific types of field blanks. Trip blanks are not opened in the field. They are used to monitor sample contamination originating from transport,

shipping, and site conditions. Equipment blanks are opened in the field and the contents poured over or through the sampling equipment, collected in a sample container, and returned to the laboratory as a sample. Equipment blanks monitor sampling device cleanliness and decontamination effectiveness.

Blood Borne Pathogens - Pathogenic microorganisms that are present in human blood and can cause diseases in humans. These pathogens include hepatitis B virus (HBV) and human immunodeficiency virus (HIV).

Bloom - A proliferation of algae and/or higher aquatic plants in a body of water; often related to pollution, especially when pollutants accelerate growth.

Blower - A unit of rotating mechanical equipment used to increase the pressure in a gas stream and providing a total pressure rise of more than 4 inches of water and less than 14.7 psi.

Boiling Point (BP) - The temperature at which a liquid changes its phase to a vapor or gas. This is the temperature at which a liquid's vapor pressure is equal to the surrounding atmospheric pressure, so the liquid rapidly volatilizes.

Boom - A floating device used to contain oil on a body of water.

Bottom Ash - The non-airborne combustion residue from burning pulverized coal in a boiler which falls to the bottom of the boiler and is removed mechanically. Bottom Ash is a concentration of the non-combustible materials, which may include toxic compounds.

BRAC Cleanup Plan (BCP) - The road map for expeditious cleanup of military facilities necessary to facilitate conveyance of property to communities for redevelopment.

BRAC Environmental Coordinator (BEC) - The DOD representative on the Base Closure Team; has responsibility and implementation authorities for environmental cleanup programs related to the transfer of the installation's real property.

BRAC Environmental Funding - Includes all NAVFAC centrally-managed environmental projects, except NEPA, that are funded through the BRAC account such as environmental studies, clean up, compliance, and restoration. For Marine Corps installations, it includes funding for only restoration work.

Brackish - Mixed fresh and salt water.

Brine Mud - Waste material, often associated with well-drilling or mining, composed of mineral salts or other inorganic compounds.

Bromine (Br) - A halogen that can substitute for hydrogen in many organic compounds, generally making the resultant compound more toxic.

Buffer - A substance that reduces the change in pH that would otherwise be produced by adding acids or bases to a solution. A pH stabilizer.

By-product - Material, other than the principal product, generated as a consequence of an industrial process.

C

Cadmium (Cd) - A soft metal used in electroplating, pigments, plastic stabilizers, batteries, fusible alloys, soft solder, and solder for aluminum. Pollution sources include smelter fumes and dust, some incineration products, fertilizer, municipal wastewater and sludge discharges. It is also an industrial byproduct of the manufacturing of zinc, copper and lead. Its mobility depends on the pH and redox state of the local environment. It can be adsorbed to sediments and soils or relatively soluble in surface water or groundwater depending on the conditions. Bioaccumulation in the environment is a concern. Ingestion can cause gastrointestinal problems, and inhalation can cause lung problems.

Calcium (Ca) - An alkaline earth metal that is very abundant in the environment. Readily forms salts with various metals and halogens. When present in water, it can indicate salinity and alkalinity. Contributes to hard water when present in high concentrations. It is an essential nutrient for animals and humans. Not generally considered toxic.

Calibration - The establishment of an analytical curve based on the absorbance, emission intensity, or other measured characteristic of known standards. The calibration standards must be prepared using the same type of acid or concentration of acids as used in the sample preparation, i.e., the same matrix.

Calibration Blank - Usually an organic or aqueous solution that is as free of analyte as possible and prepared with the same volume of chemical reagents used in the preparation of calibration standards and diluted to the appropriate volume with the same solvent (water or organic). The calibration blank is used to give the null reading for the instrument response versus concentration calibration curve. One calibration blank should be analyzed with each analytical batch or every method-specified number of samples, whichever is more frequent.

Calibration Check - Verification of the ratio of instrument response to analyte amount, a calibration check is done by analyzing for analyte standards in an appropriate solvent. Calibration check solutions are made from a stock solution which is different from the stock used to prepare standards.

Calibration Standards - A series of known standard solutions used by the analyst for calibration of the instrument (i.e. preparation of the analytical curve).

Cancer - The development of a malignant tumor or abnormal formation of tissue.

Cancer Risk - Incremental probability of an individual developing cancer over a lifetime as a result of exposure to a chemical.

Cap - A layer of clay, or other impermeable material installed over the top of a closed landfill to prevent infiltration of rainwater and minimize leachate.

Capillary Action - Upward movement of water through very small spaces due to molecular forces and surface tension, called capillary forces.

Capillary Fringe - A zone of porous material lying between the unsaturated and saturated zone, just above the water table, which may hold water by capillary action in the smaller void spaces.

Carbon (C) - An element, the presence of which can be used to separate organic from inorganic compounds.

Carbon Absorber - An add-on control device that uses activated carbon to absorb volatile organic compounds from a gas stream. The VOCs are later recovered from the carbon.

Carbon Adsorption - A treatment system that removes contaminants from groundwater or surface water by forcing it through tanks containing activated carbon treated to attract the contaminants.

Carbon Dioxide (CO_2) - A colorless, odorless, non-poisonous gas, which results from fossil fuel combustion and is normally a part of the ambient air.

Carbon Monoxide (CO) - A colorless, odorless, poisonous gas produced by incomplete fossil fuel combustion.

Carcinogen - 1) Any substance that can cause, aggravate, or contribute to the production of cancer. 2) A chemical classification for the purpose of risk assessment based on the weight of evidence for human carcinogenicity according to USEPA 1986 Guidelines for Risk Assessment, in which carcinogens are summarized as follows: *Group A*: Human carcinogen: Sufficient evidence from human epidemiological studies. *Group B*: Probable Human Carcinogen: *B1*: Limited evidence from human epidemiological studies. *B2*: Sufficient evidence from animal studies and inadequate or no data from human epidemiological studies. *Group C*: Possible Human Carcinogen: Limited evidence of carcinogenicity from animal studies in the absence of human data.

Carcinogenic - Causing or producing cancer.

Carcinogenic Potency Factor (CPF) - The upper 95th percentile confidence limit of the slope of the dose-response curve; expressed in units of $(mg/kg/day)^{-1}$. When derived from human epidemiological data, the carcinogenic potency factor may be a maximum likelihood estimate.

Carrying Capacity - 1) In recreation management, the amount of use a recreation area can sustain without loss of quality. 2) In wildlife management, the maximum number of animals an area can support during a given period.

CAS Registration Number - A number assigned by the Chemical Abstracts Service to identify a chemical.

Casing - Pipe used in water well construction generally extending from the land surface to the top of the well screen. The type and size of casing used will vary depending on well yield and other design requirements.

Catabolism - The process whereby energy is extracted from organic compounds by breaking them down into their component parts.

Catalyst - An inorganic substance that changes the speed, yield, or required temperature of a chemical reaction without being consumed or chemically changed by the chemical reaction.

Catanadromous - Fish that swim downstream to spawn.

Categorical Exclusion (CE) - A class of actions which either individually or cumulatively would not have a significant effect on the human environment and therefore would not require preparation of an Environmental Assessment or Environmental Impact Statement under the National Environmental Policy Act (NEPA).

Cathodic Protection - A technique to prevent corrosion of a metal surface by making it the cathode of an electrochemical cell.

Cation Exchange Capacity - A quantitative measure of surface charge of a cation, reported in equivalents of exchangeable ions per unit weight of the solid.

Cells - 1) In solid waste disposal, holes where waste is dumped, compacted, and covered with layers of dirt on a daily basis. 2) The smallest structural part of living matter capable of functioning as an independent unit.

Characteristic - Any one of the four categories used in defining hazardous waste: ignitability, corrosivity, reactivity, and toxicity.

Characterization - Facility or site sampling, monitoring and analysis activities to determine the extent and nature of a release. Characterization provides the basis for acquiring the necessary technical information to develop, screen, analyze, and select appropriate cleanup techniques.

Chelate - A coordination complex in which more than one atom or molecule (often an organic compound) binds to a metal. In the environment, chelation effectively removes the metal: it is no longer available

for chemical interactions or to biota. See Complexation.

Chemical Oxygen Demand (COD) - A measure of the oxygen required to oxidize all compounds, both organic and inorganic, in water.

Chemical Partitioning - The preferential separation of a chemical into different media or states. For example, many metals are more likely to partition to sediments than to remain in groundwater.

Chemical Resistance - The ability of chemical protective clothing to maintain its integrity and protection qualities when it comes into contact with a hazardous material.

Chemical Stress - The result of a chemical reaction of two or more materials. Examples include corrosive materials attacking a metal, the pressure or heat generated by the decomposition or polymerization of a substance, or any variety of corrosive actions.

Chemical Treatment - Any one of a variety of technologies that use chemicals or a variety of chemical processes to treat waste.

Chemicals of Concern (COC) - Specific constituents that are identified for evaluation in the risk assessment process.

Chemicals of Potential Concern (COPC) - Chemicals identified in the initial stages of a site investigation that may pose a risk, and so are further investigated to gather data for a risk assessment.

Chlorides (Cl^-) - Indicative of the concentration of salt water. Concentrations above 250mg/L are detectable by taste.

Chlorinated Hydrocarbons - These include a class of persistent, broad-spectrum organic compounds that linger in the environment and accumulate in the food chain. Among them are the insecticides DDT, aldrin, dieldrin, heptachlor, chlordane, lindane, endrin, mirex, hexachloride, and toxaphene. Other examples include tetrachloroethene, trichloroethene, carbon tetrachloride, and trichloromethane, used as industrial solvents.

Chlorinated Solvent - An organic hydrocarbon in which chlorine atoms substitute for one or more hydrogen atoms in the compound's structure, e.g., methylene chloride and 1,1,1-trichloromethane. Commonly used in aerosol spray containers, in highway paint, for grease removal in manufacturing, dry cleaning, and other operations. The substituted chlorine makes the compound less flammable than the nonsubstituted equivalent, but more toxic.

Chlorination - The application of chlorine to drinking water, sewage, or industrial waste to disinfect or to oxidize undesirable compounds.

Chlorine (Cl) - A halogen that can substitute for hydrogen in many organic compounds. The resulting compounds are generally less flammable but highly toxic and persistent in the environment.

Chlorofluorocarbons (CFCs) - A family of inert, nontoxic, and easily liquified chemicals used in refrigeration, air conditioning, packaging, insulation, or as solvents and aerosol propellants. Because CFCs are not destroyed in the lower atmosphere they drift into the upper atmosphere where their chlorine components destroy ozone.

Chromium (Cr) - A heavy metal that exists naturally as the trivalent (III) form and is man-made in the hexavalent (VI) form. It is used in making chrome-steel and chrome-nickel-steel alloys, chrome plating of metals, brick lining for high-temperature industrial furnaces, dyes, pigments, leather, wood preservatives, and cooling tower water treatment. The ultimate fate of chromium is to settle into sediments, however, it is slightly soluble and can persist in the water column for years before settling. In soil, chromium (III) tends to adhere to soil particles whereas chromium (VI) does not. This process depends on the pH and redox state of the soil. Chromium (III) is not very toxic because it does not bioaccumulate and generally does not penetrate biological membranes. However, chromium (VI) is considered more toxic because of its high oxidizing potential and it can penetrate biological membranes. Dermal contact with chromic acid or chromium salts can cause lesions and ulcers. Chromium is a Group B, human carcinogen by inhalation. See Heavy Metals.

Chronic Daily Intake (CDI) - Exposure expressed as mass of a substance contacted per unit body weight per unit time averaged over a long period of time (as a Superfund program guideline, seven years to a lifetime) mg/kg/day.

Chronic Effect - An adverse effect on a human or animal in which symptoms recur frequently or develop slowly over a long period of time.

Chronic Toxicity - The capacity of a substance to cause long-term poisonous human health effects. See Acute Toxicity.

Circle of Influence - The circular outer edge of the depression produced in the water table by pumping water from a well. See Cone of Influence, Cone of Depression.

cis - In a chiral (directional) organic compound, the prefix cis indicates that the substituted atoms are on the same side of the compound. For example, in cis 1,2-Dichloroethene, the chlorine atoms are on the same side of the carbon to carbon double bond. The presence or absence of cis or trans compounds can indicate whether biological activity or abiotic,

chemical reactions have taken place in the environment. See trans.

Clarification - Clearing action that occurs during water treatment when solids settle out. This is often aided by centrifugal action and chemically induced coagulation.

Clarifier - A tank in which solids settle to the bottom and are subsequently removed as sludge.

Clastic Rock - A consolidated sedimentary rock composed of broken fragments that are derived from pre-existing rocks, e.g. sandstone, conglomerate, shale, etc.

Clay - 1) Natural material with plastic (flowing) properties; 2) A composition of particles of very fine size grades; and 3) A composition of crystalline fragments of hydrous-aluminum silicate or hydrous-magnesium silicate minerals.

Clay Soil - Soil material containing more than 40 percent clay, less than 45 percent sand, and less than 40 percent silt.

Clean Air Act (CAA) - The CAA was passed in 1970 as amendments to 42 USC 7401, and was amended in 1990. Its purpose is to "protect and enhance the quality of the Nation's air resources." Its primary application is through Prevention of Significant Deterioration permits to regulate new potentially polluting facilities. Of increasing importance are the National Emissions Standards for Hazardous Air Pollutants (NESHAPs).

Clean Water Act of 1977 (CWA) - The CWA amended the Federal Water Pollution Control Act first passed in 1956. Its objective is to "restore and maintain the chemical, physical and biological integrity of the Nation's waters." The Act's major enforcement tool is the National Pollutant Discharge Elimination System (NPDES) permit.

Cleanup - Actions taken to deal with a release or threat of release of a hazardous substance that could affect humans and/or the environment. The term "cleanup" is sometimes used interchangeably with the terms remedial action, removal action, response action, or corrective action.

Cleanup Level - The residual concentration of a hazardous substance in a medium that is determined to be protective of human health and the environment under specified exposure conditions.

Cleanup Technology - A technology that is the whole or part of a treatment train to cleanup hazardous waste sites.

Climatology - The science that deals with the climate and climatic phenomena.

Closeout - Conducted when DON considers no further response actions under the IR Program to be appropriate for the site and when site cleanup confirms that no significant threat to public health or the environment exists. The Navy forwards closeout documentation to the regulators for concurrence.

Closure - The regulatory process of deactivating, stabilizing and or decontaminating waste management units or facilities under RCRA.

Closure Plan - Documentation prepared to guide the deactivation, stabilization and surveillance of a waste management unit or facility under RCRA.

Coagulation - Clumping of particles in water to settle out impurities, often induced by chemicals such as lime, alum, and iron salts.

Coastal Plains - Any plain which has its margin on the shore of a large body of water, particularly the sea, and generally represents a strip of recently emerged sea floor.

Coastal Zone - As defined by the NCP, all US waters subject to the tide, US waters of the Great Lakes, specified ports and harbors on inland rivers, waters of the contiguous zone, other waters of the high seas subject to the NCP, and the land surface or land substrata, groundwaters, and ambient air proximal to those waters. The term coastal zone delineates an area of federal responsibility for response action. Precise boundaries are determined by EPA/USCG agreements and identified in federal regional contingency plans.

Cobalt (Co) - A hard, ductile, ferromagnetic metal. It is rare but produced primarily as a byproduct of other metals. It is used in chemical agents, electroplating, ceramics, lamp filaments, catalysts, dryers in printing inks, paints and varnishes, and in high temperature alloys. Cobalt can be soluble in water, but depends mainly on the presence and characteristics of adsorbing clay minerals and hydrous oxides of iron, manganese and aluminum in the local environment. Chelation is also possible.

Code of Federal Regulation (CFR) - The basic reference source for federal rules. Published annually, it is a compilation of the regulations of various federal agencies. The CFR is divided into 50 titles according to subject. For example, Title 7 deals with agriculture, Title 40 with the environment and Title 49 with transportation. Titles are divided into chapters, then to parts, sections, etc. The section is the basic unit of the CFR. Ideally, it consists of a short, concise presentation of a single point. It is important to note that the CFRs are changed daily by publication of the Federal Register (FR). The CFRs are the combination of regulations published in the FR for the previous year.

Coefficient of Variation (CV) - The standard deviation as a percent of the arithmetic mean.

Coliform Bacteria - A group of bacteria considered a reliable indicator of the adequacy of treatment for bacterial pathogens.

Coliform Index - A rating of the purity of water based on a count of fecal bacteria.

Coliform Organism - Microorganisms found in the intestinal tract of humans and animals. Their presence in water indicates fecal pollution and potentially adverse contamination by pathogens.

Colloids - Very small, less than 1 µm, finely divided solids (that do not dissolve) that remain dispersed in a liquid for a long time due to their small size and electrical charge.

Combustible - A term the NFPA, DOT, and others use to classify certain materials with low flash points that ignite easily. Both NFPA and DOT generally define combustible liquids as having a flash point of 100°F (38°C) or higher. The NFPA classifies nonliquid materials such as wood and paper as ordinary combustibles. OSHA defines combustible liquids within the Hazard Communication Law as any liquid with a flash point at or above 100°F (38°C) but below 200°F (93.3°C).

Combustion - 1) Burning, or rapid oxidation, accompanied by release of energy in the form of heat, light, and/or sound. A basic cause of air pollution. 2) Refers to controlled burning of waste, in which heat chemically alters organic compounds, converting into stable compounds such as carbon dioxide and water.

Combustion Chamber - The actual compartment where waste is burned in an incinerator.

Cometabolism - A reaction in which microbes transform a contaminant even though the contaminant cannot serve as an energy source for the organisms. To degrade the contaminant, the microbes require the presence of other compounds (primary substrates) that can support their growth.

Comment Period - Time provided for the public to review and comment on a proposed action or rule making after publication in the Federal Register or as a document.

Commercial Waste - All solid waste emanating from business establishments such as stores, markets, office buildings, restaurants, shopping centers, and theaters.

Commercial Waste Management Facility - A treatment, storage, disposal, or transfer facility which accepts waste from a variety of sources, as compared to a private facility which normally manages a limited waste stream generated by its own operations.

Community - In ecology, a group of interacting populations in time and space. Sometimes, a particular subgrouping may be specified, such as the fish community in a lake or the soil arthropod community in a forest.

Community Environmental Response Facilitation Act of 1992 (CERFA) - This law amends CERCLA and requires that the federal government identify real property which is not contaminated, and that offers the greatest opportunity for expedited reuse and redevelopment by the community on each facility. The identified parcels of real property must be either free from hazardous substances and petroleum products, including aviation fuel and motor oil, and their derivatives, or the remediation of contamination by those substances should be expedited to facilitate transfer to the public.

Community Relations - The effort to establish two-way communication with the public to create understanding of Installation Restoration Program and related actions, to assure public input into decision-making processes related to affected communities, and to make certain that the Navy is aware of and responsive to public concerns. Specific community relations activities are required in relation to Superfund remedial actions. The term "public" includes citizens directly affected by the site, other interested citizens or parties, organized groups, elected officials, and potentially responsible parties.

Community Relations Plan (CRP) - A written plan of action that provides for interaction with the public, elected officials and environmental groups, including obtaining their input at appropriate points during the Installation Restoration (IR) process. A CRP must be developed and implemented for removal actions and remedial actions at all IR sites. It will be based on research conducted by community interviews with state and local officials, citizen and community groups, interested residents, and local media representatives.

Community Reuse Plan - The basis for the proposed action and alternatives addressed in the DOD Component's EIS or other NEPA analyses.

Community Water System - In Virginia, as defined by the Virginia Department of Health, a water system serving at least 25 individuals or more than 15 residential connections.

Comparability - A qualitative measure of the confidence with which one data set can be compared to another. Sample data should be comparable with other measurement data for similar samples and sample conditions.

Completeness - A measure of the amount of valid data obtained from a measurement system compared to the amount that was expected to be obtained under routine operating conditions.

Complexation - Electrostatic association of positively charged metal ions and negatively charged organic matter, usually with two or more points of attachment. See Chelate.

Composite Sample - A representative sample created by the homogenization of multiple samples from multiple sampling locations within the same general area. A composite sample is generally taken to indicate the average concentration in a particle media. For example, composite samples are often taken of soil to characterize it for disposal. Typically, only one sample is necessary for every 100 cubic yards. Therefore, several grab samples from each roll-off containing the soil may be homogenized to form the composite sample. Taken in this way, the composite will represent an average concentration of the chemicals of concern for the soil.

Compost - The relatively stable humus material that is produced from a composting process in which bacteria in soil mixed with garbage and degradable trash break down the mixture into organic fertilizer.

Composting - The controlled biological decomposition of organic material in the presence of air and water to form a humus-like material. Controlled methods of composting include mechanical mixing and aerating, ventilating the materials by dropping them through a vertical series of aerated chambers, or placing the compost in piles out in the open air and mixing it or turning it periodically.

Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) - The Federal statute enacted in 1980 and amended in 1986 by the Superfund Amendment and Reauthorization Act (SARA) that establishes a comprehensive, statutory framework for identifying, investigating, and cleaning up releases of hazardous substances to the environment. CERCLA authorizes the President to take response actions when a release or the threat of a release is discovered. Through Executive Order 12580, signed in January 1987, the President directs the Secretary of Defense to implement investigation and cleanup measures in consultation with EPA for releases of hazardous substances from facilities under the jurisdiction of the Secretary.

Comprehensive Environmental Response, Compensation and Liability Act Information System (CERCLIS) - EPA's comprehensive database and management system that inventories and tracks releases addressed or needing to be addressed by the Superfund program. CERCLIS contains the official inventory of CERCLA sites and supports EPA's site planning and tracking functions. Sites that EPA decides do not warrant moving further in the site evaluation process are given a "No Further Response Action Planned" (NFRAP) designation. This means that no additional federal steps under CERCLA will be taken at the site unless further information warrants action. Sites are not removed from the data base after completion of evaluations in order to document that these evaluations took place and to preclude the possibility that they be needlessly repeated. Inclusion of a specific site or area in the CERCLIS database does not represent a determination of any party's liability, nor does it represent a finding that any response action is necessary. Sites that are deleted from the NPL are not designated NFRAP sites. Deleted sites are listed in a separate category in the CERCLIS database.

Comprehensive Long Term Environmental Action, Navy (CLEAN) - A broad multi-year environmental contract.

Compressed Natural Gas (CNG) - An alternative fuel for motor vehicles; considered one of the cleanest because of low hydrocarbon emissions and its vapors are relatively non-ozone producing. However, it does emit a significant quantity of nitrogen oxides.

Conductance - A rapid method of estimating the dissolved-solids content of a water supply by determining the capacity of a water sample to carry an electrical current.

Conductivity - A measure of the ability of a solution or material to carry an electrical current.

Cone of Depression - A conelike depression of the water table (or of a potentiometric surface of a confined aquifer) that is created in the vicinity of a well by pumping. The surface area included in the cone is known as the area of influence of the well.

Cone of Influence - The depression, roughly conical in shape, produced in the water table by the pumping of water from a well.

Confined Aquifer - An aquifer in which groundwater is confined between two aquitards and is under pressure which is significantly greater than atmospheric pressure.

Confinement - Confinement techniques are the actions necessary to confine a hazardous material release to a limited area. These actions occur remote from the spill or leak site and are therefore defensive.

Confining Unit - A stratigraphic unit which, because of low permeability relative to the units above or below, prevents or impedes upward or downward movement of water and pressure.

Conservation - Preserving and renewing, when possible, human and natural resources. The use, protection, and improvement of natural resources according to principles that will assure their highest economic or social benefits.

Consolidated - A rock that is firm and rigid in nature due to the natural interlocking and/or cementation of its mineral grain components. The reverse is unconsolidated.

Construction and Demolition Waste - Waste building materials, dredging materials, tree stumps, and rubble resulting from construction, remodeling, repair, and demolition of homes, commercial buildings and other structures and pavements. May contain lead, asbestos, or other hazardous substances.

Consumptive Use - Water removed from available supplies without return to a water resource system (uses such as manufacturing, agriculture, and food preparation.)

Contaminant - 1) Any physical, chemical, biological, or radiological substance or matter that has an adverse affect on air, water, or soil. 2) As defined by section 101(33) of CERCLA, shall include but not be limited to, any element, substance, compound or mixture, including disease-causing agents, which after release into the environment and upon exposure, ingestion, inhalation, or assimilation into any organism, either directly from the environment or indirectly by ingestion through food chains, will or may reasonably be anticipated to cause death, disease, behavioral abnormalities, cancer, genetic mutation, physiological malfunctions (including malfunctions in reproduction) or physical deformations, in such organisms or their offspring. Shall not include petroleum, including crude oil or any fraction thereof which is not otherwise specifically listed or designated as a hazardous substance and shall not include natural gas, liquified natural gas or synthetic gas of pipeline quality (or mixtures of natural gas and such synthetic gas). 3) For purposes of the NCP, the term pollutant or contaminant means any pollutant or contaminant that may present an imminent and substantial danger to public health or welfare.

Contaminant Hazard Factor (CHF) - A combined measure of contaminant concentrations in a given environmental medium.

Contaminated Site - Any property, including but not limited to structures, sediment, soil and water, that contains a contaminant resulting from a discharge or release.

Contamination - Introduction into water, air and/or soil of microorganisms, chemicals, toxic substances, wastes, or wastewater in a concentration that makes the medium unfit for its next intended use. Also applies to surfaces of objects and buildings, and various household and agricultural use products.

Contamination Reduction Zone (CRZ) - In hazardous waste health and safety operations, the forward control for operations outside the Hot Zone. Personnel protection may be required. Restricted to operations and support personnel essential to hands-on work performed in the Hot Zone.

Contiguous Zone - A zone of the high seas, established by the U. S. under the Convention on the Territorial Sea and Contiguous Zone, that is in contact with or touching the territorial sea and that extends 9 nautical miles seaward from the outer limit of the territorial sea.

Continuing Calibration - Analytical standard run every ten analytical samples or every two hours, whichever is more frequent, to verify the calibration of the analytical systems.

Contract Required Detection Limit (CRDL) - Minimum level of detection acceptable under the contract Statement of Work.

Control Limits - A range within which specified measurement results must fall to be compliant. Control limits may be mandatory, requiring corrective action if exceeded, or advisory, requiring that noncompliant data be flagged.

Conventional Pollutants - Statutorily listed pollutants understood well by scientists. These may be in the form of organic waste, sediment, acid, bacteria, viruses, nutrients, oil and grease, or heat.

Cooperative Agreement (CA) - 1) Part of the DSMOA program. The CA assists in implementing the DSMOA. The CA provides reimbursement to states for cleanup activities at installations within the state. 2) An assistance agreement whereby EPA transfers money, property, services or anything of value to a state for the accomplishment of CERCLA-authorized activities or tasks.

Copper (Cu) - A ductile, malleable metal that occurs naturally in rock, soil, water, sediment, plants and animals and can occur as copper (II) or (I). It is used in brass, copper alloys, electrical conductors, copper salts, art, in agriculture to treat plant diseases, for water treatment, and as preservatives for wood, leather and fabrics. Most copper in water is in the (II) state and is bound to organic matter and not in a readily exchangeable form. In soil, copper will be strongly adsorbed. Copper salts are strong skin and mucous membrane irritants. When bioavailable, copper is highly toxic to aquatic invertebrates.

Corrective Action (CA) - The sequence of actions that include site assessment, interim remedial action, remedial action, operation and maintenance of equipment, monitoring of progress, and termination of the remedial action.

Corrective Action Plan (CAP) - Associated with the Underground Storage Tank (UST) Program, it describes the appropriate corrective measures to be

implemented at a site. Equivalent to a CERCLA Feasibility Study (FS).

Corrective Measures Implementation (CMI) - The RCRA Corrective Action phase during which the selected cleanup technology is constructed, installed, implemented and/or operated until confirmatory sampling and analysis indicate that cleanup levels have been reached. Equivalent to a CERCLA Remedial Action (RA).

Corrective Measures Study (CMS) - Evaluates the alternatives for cleanup technology in terms of the specific site characteristics such as contaminants, soil conditions and hydrogeologic conditions in a RCRA Corrective Action cleanup. Equivalent to a CERCLA Feasibility Study (FS).

Correlation Coefficient (r) - A number which indicates the degree of dependence between two variables (concentration - absorbance). The more dependent they are, the closer the value of r to one. Determined on the basis of the least squares line.

Correspondence - Any official letters, memorandums, notes, telecommunications, and any other forms of addressed, written communications sent and received by the EFD/EFA or other sources. Internal Department of Navy drafts and related internal memorandum should not be included in the Administrative Record (AR) unless they contain information found nowhere else that is considered or relied upon in the CERCLA response action decision. Drafts that are circulated outside of DON for review (e.g., to regulators or the public) shall be included in the AR as well as the comments received by DON from those entities (and DON response to those comments).

Corrosion - The dissolution and wearing away of metal caused by a chemical reaction such as between water and pipes, chemicals touching a metal surface, or contact between two metals.

Corrosive - A chemical agent that reacts with the surface of a material causing it to deteriorate or wear away.

Corrosivity Hazard - A material that causes visible destruction of or irreversible alterations to living tissue by chemical action at the point of contact.

Cosolvent Effects - When more than one solvent is dissolved in aqueous solution, the solubility of each solvent can be increased due to the presence of other solvents.

Cost/Benefit Analysis - A quantitative evaluation of the costs which would be incurred versus the overall benefits to society of a proposed action such as the establishment of an acceptable dose of a toxic chemical.

Cost-Effective Alternative - An alternative control or corrective method identified after analysis as being the best available in terms of reliability, performance, and cost. Although costs are one important consideration, regulatory and compliance analysis does not require EPA to choose the least expensive alternative. For example, when selecting or approving a method for cleaning up a Superfund site the Agency balances costs with the long-term effectiveness of the methods proposed and the potential danger posed by the site.

Cost Recovery - A legal process by which potentially responsible parties who contributed to contamination at a Superfund site can be required to reimburse the Superfund for money spent during any cleanup actions by the federal government.

Cost Sharing - A publicly financed program through which society, as a beneficiary of environmental protection, shares part of the cost of pollution control with those who must actually install the controls. In Superfund, the government may pay part of the cost of a cleanup action with those responsible for the pollution paying the major share.

Cover Material - Soil used to cover compacted solid waste in a sanitary landfill.

Cradle-to-Grave or Manifest System - A procedure in which hazardous materials are identified and tracked as they are produced, treated, transported, and disposed of by a series of permanent, linkable, descriptive documents (e.g., manifests).

Criteria - Descriptive factors taken into account by EPA in setting standards for various pollutants. These factors are used to determine limits on allowable concentration levels, and to limit the number of violations per year. When issued by EPA, the criteria provide guidance to the states on how to establish their standards.

Cross Section - A diagram or drawing that shows features transected by a given plane, usually a vertical plane so that the view shows features through the depth of the earth.

Cubic Feet per Minute (CFM) - A measure of the volume of a substance flowing through air within a fixed period of time. With regard to indoor air, refers to the amount of air, in cubic feet, that is exchanged with indoor air in a minute's time, i.e., the air exchange rate.

Cumulative Exposure - The summation of exposures of an organism to a chemical over a period of time.

Cycloalkene - Unsaturated, monocyclic hydrocarbon with the formula C_nH_{2n-2}.

D

Data Qualifiers - Symbols added as a suffix to analytical results used to flag data: *Organic Analysis: A* -

Indicates that a Tentatively Identified Compound (TIC) is a suspected aldol-condensation product. *B* - The analyte was found in the associated blank as well as in the sample. It indicates possible/probable blank contamination and warns the data user to take appropriate action. This flag must be used for a TIC as well as for a positively identified Target Compound List (TCL) compound. *C* - Applies to pesticide results where the identification has been confirmed by Gas Chromatography/ Mass Spectrometry (GC/MS). Single component pesticides ≥ 10 ng/µl in the final extract shall be confirmed by GC/MS. *D* - Identifies all compounds identified in an analysis at a secondary dilution factor. If a sample or extract is reanalyzed at a higher dilution factor, as in the E flag below, the DL suffix is appended to the sample number on Form I for the diluted sample, and all concentration values reported on that Form I are flagged with the D flag. *E* - Identifies compounds whose concentrations exceed the calibration range of the GC/MS instrument for that specific analysis. This flag will not apply to pesticides/PCBs analyzed by GC/EC methods. If one or more compounds have a response greater than full scale, the sample or extract must be diluted and reanalyzed. If the dilution of the extract causes any compounds identified in the first analysis to be below the calibration range in the second analysis, then the results of both analyses shall be reported. *J* - Positive identification, but estimated concentration. This flag is used either when estimating a concentration for TIC where a 1:1 response is assumed, or when the mass spectral data indicate the presence of a compound that meets the identification criteria but the result is less than the sample quantitation limit but greater than zero. *N* - Presumptive evidence of presence, TIC. *NJ* - Estimated concentration of a TIC. *P* - Used for a pesticide/aroclor target analyte when there is a greater than 25 percent difference for detected concentrations between the two GC columns. Q - No analytical result. *R* - Quality control indicates that sample results are rejected and data are not usable (compound may or may not be present). Resampling and reanalysis are necessary for verification. *S* - Estimated due to surrogate outliers. *T* - Compound present in the TCLP blank. *U* - Indicates compound was analyzed for but not detected. The sample quantitation limit must be corrected for dilution and for percent moisture. *X* - Other specific flags and footnotes may be required to properly define the results. If used, they must be fully described and such description attached. If more than one is required, Y and Z are used as needed. If more than five qualifiers are required for a sample result, the X flag can combine several flags. For instance, the X flag may combine the A, B, and D flags for some samples. *Metals Analysis, flags differing from organic analysis:* *B* - Indicates analyte result between the instrument detection limit and contract required detection limit. *E* - The reported value is estimated because of the presence of interference. An explanatory note must be included with the results. *M* - Duplicate injection precision not met. *N* - Spiked sample recovery not within control limits. *S* - The reported value was determined by the Method of Standard Additions. *W* - Postdigestion spike for Furnace Atomic Absorption analysis is out of control limits (85-115%), while sample absorbance is less than 50% of spike absorbance. * - Duplicate analysis not within control limits. + - Correlation coefficients for the Method of Standard Addition is less than 0.995. *Method (Analytical) Qualifier:* *A* - Flame Atomic Absorption (AA). *AS* - Semiautomated Spectrophotometric. *AV* - Automated Cold Vapor AA. *C* - Manual Spectrophotometric. *CV* - Manual Cold Vapor AA. *F* - Furnace AA. *NC* - Not calculated as per protocols. *NR* - The analyte is not required to be analyzed. *P* - ICP. *T* - Titrimetric.

Data Quality Objectives (DQOs) - Quantitative and qualitative statements specified to ensure that data of appropriate quantity and quality is collected during field activities to support specific decisions or regulatory actions.

Data Validation - A systematic effort to review data to identify any outliers or errors and thereby cause deletion or flagging of suspect values to assure the validity of the data to the user. This process may be done by manual or computer methods.

Daughter Product - A compound that results directly from the biodegradation of another. For example, *cis* 1,2-Dichloroethene (*cis* 1,2-DCE) is commonly a daughter product of Trichloroethene (TCE).

Decay Constant - A constant which expresses the probability that an atom or molecule of a chemical will decay in a given time interval.

Dechlorination - Removal of chlorine from a substance by chemically replacing it with hydrogen or hydroxide ions in order to detoxify the substance.

Decision Document (DD) - Demonstrates that the response action chosen is consistent with, and meets the requirements of, CERCLA and the NCP; and documents Navy/Marine Corps decisions regarding response action selection. Equivalent to a Record of Decison for non-NPL sites.

Decomposition - The breakdown of matter by bacteria and fungi, changing the chemical makeup and physical appearance of materials.

Decontamination - Removal of harmful substances from exposed individuals, rooms and furnishings in buildings, or the exterior environment.

Defense Environmental Network and Information Exchange (DENIX) - A DOD-wide information exchange to facilitate and support communications and environmental awareness; consists of an integrated set of menus comprising a collection of application programs, databases, bulletin board forums, and UNIX utilities to complement other existing services available; provides access to a wide variety of information which can be downloaded to personal computers.

Defense Environmental Restoration Account (DERA) - DOD-established account to pay the cost of DOD expenses to clean up hazardous waste sites; DOD transfers DERA funds to the services for uses consistent with the DERP; the DOD counterpart of the Superfund Program regulated under CERCLA and SARA and RCRA Corrective Action.

Defense Environmental Restoration Program (DERP) - Formally established by Congress in 10 USC 2701-2707 and 2810; provides centralized management for the cleanup of DOD hazardous waste sites consistent with the provisions of CERCLA as amended by SARA, the NCP, and E.O. 12580.

Defense Site Environmental Restoration Tracking System (DSERTS) - A computer based system used to track environmental restoration activities at active installations. The system is used to collect and maintain information about environmental remediation and provide reports that detail the information at the DOD Component level. Data gathered by DSERTS will be submitted to RMIS for DOD processing and will be used as the principal source of information for each DOD component in the Annual Report to Congress.

Defense/State Memorandum of Agreement (DSMOA) - A grant program to support state participation in federal cleanups.

Degradation - 1) The process by which a chemical is reduced to a less complex form. 2) The physical destruction or decomposition of a clothing material due to exposure to chemicals, use, or ambient conditions (i.e., storage in sunlight). Degradation is noted by visible signs such as charring, shrinking, dissolving, or by testing the clothing material for weight changes, loss of fabric tensile strength, etc. Important in assessing the continuing protection provided by protective clothing for hazardous waste operations.

Dehydrohalogenation - Elimination of HX resulting in formation of an alkene.

Delegated State - A state (or other governmental entity such as a tribal government) that has received authority to administer an environmental regulatory program in lieu of a federal counterpart. As used in connection with NPDES, UIC, and UST programs, the term does not connote any transfer of federal authority to a state.

Delist - Use of the petition process to have a facility's status on the National Priorities List rescinded.

Dense Non-Aqueous Phase Liquid (DNAPL) - A liquid that does not dissolve in water, and so forms a separate phase from water, which is also denser than water and therefore sinks. Many chlorinated solvents are DNAPLs.

Density - A measure of how heavy a solid, liquid, or gas is for its size. Mathematically, it is the ratio of mass to volume of a material, usually in grams per cubic centimeter or pounds per gallon.

Dermal Exposure - Contact between a chemical and the skin.

Dermal Toxicity - The ability of a pesticide or toxic chemical to poison people or animals by contact with the skin.

Desiccant - A chemical agent that absorbs moisture; some desiccants are capable of drying out plants or insects, causing death.

Design Capacity - The average daily flow that a treatment plant or other facility is designed to accommodate.

Designated Uses - Those water uses identified in state water quality standards that must be achieved and maintained as required under the Clean Water Act. Uses can include cold water fisheries, public water supply, irrigation, etc.

Designer Bugs - Popular term for microbes developed through biotechnology that can degrade specific toxic chemicals at their source in toxic waste dumps or in groundwater.

Desorption - The release of chemicals attached to solid surfaces. Antonym - Sorption.

Detection Limit - The minimum concentrations which must be accurately and precisely measured by the laboratory and/or specified in the quality assurance plan.

Detention Time - 1) The theoretical calculated time required for a small amount of water to pass through a tank at a given rate of flow. 2) The actual time that a small amount of water is in a settling basin, flocculating basin, or rapid-mix chamber. 3) In

storage reservoirs, the length of time water will be held before being used.

Detergent - Synthetic washing agent that helps remove dirt and oil. Some contain compounds which kill useful bacteria and encourage algae growth when they are in wastewater that reaches receiving waters.

Development Effects - Adverse effects such as altered growth, structural abnormality, functional deficiency, or death observed in a developing organism.

Dewater - 1) Remove or separate a portion of the water in a sludge or slurry to dry the sludge so it can be handled and disposed. 2) Remove or drain the water from a tank or trench.

Diagenesis - The chemical and physical changes occurring in sediments before consolidation or while in the environment of deposition.

Diatoms - Cellular or colonial photosynthetic protists most often in marine environments. They are very small in size and are components of plankton, a major food source at the bottom of the marine food chain.

Diazinon - An insecticide. In 1986, EPA banned its use on open areas such as sod farms and golf courses because it posed a danger to migratory birds. The ban did not apply to agricultural, home lawn or commercial establishment uses.

Dibenzofurans - A group of highly toxic organic compounds.

Dichloro-Diphenyl-Trichloroethane (DDT) - The first chlorinated hydrocarbon insecticide. It has a half-life of 15 years and can accumulate in fatty tissues of certain animals. EPA banned registration and interstate sale of DDT for virtually all but emergency uses in the United States in 1972 because of its persistence in the environment and accumulation in the food chain.

1,1-Dichloroethene, (1,1-DCE) - A colorless, volatile liquid with a sweet, mild smell. It is an intermediate in production of vinylidene polymer plastics like SARAN, and is an irritant to the skin and mucous membranes. It is a Group C, probable human carcinogen.

cis 1,2-Dichloroethene, (cis 1,2-DCE) - A biological breakdown product of the more halogenated forms of ethene, Tetrachloroethene and Trichloroethene. Also used as an industrial solvent and is volatile.

total 1,2-Dichloroethene, (1,2-DCE) - Both cis and trans DCE.

trans 1,2-Dichloroethene, (trans 1,2-DCE) - A chemical breakdown product of the more halogenated forms of ethene, Tetrachloroethene and Trichloroethene. Also used as an industrial solvent and is volatile.

Dicofol - A pesticide used on citrus fruits.

Diffused Air - A type of aeration that forces oxygen into sewage by pumping air through perforated pipes inside a holding tank.

Diffusion - The movement of a chemical, suspended, or dissolved particle from a more concentrated to a less concentrated area. The process tends to distribute the chemical or particles more uniformly.

Diffusion Coefficient (K_d) - Provides a soil or sediment-specific measure of the extent of chemical partitioning between soil or sediment and water, unadjusted for dependency upon organic carbon. To adjust for the fraction of organic carbon (f_{oc}) present in soil or sediment use $K_d = K_{oc} * f_{oc}$. The higher the K_d, the more likely a chemical is to bind to soil or sediment than to remain in water. This affects the efficiency of water-based remediation.

Diffusivity - A measurement of the movement of a molecule in a liquid or gas medium as a result of differences in concentration. It is used to calculate the rate of volatilization of a pure substance from a surface or in estimating a Henry's Law constant for chemicals with low water solubility. The higher the diffusivity, the more likely a chemical is to move in response to concentration gradients.

Digestion - The biochemical decomposition of organic matter, resulting in partial gasification, liquefaction, and mineralization of pollutants.

Dike - A low wall that can act as a barrier to prevent a spill from spreading.

Diluent - Any liquid or solid material used to dilute or carry an active ingredient.

Dilution Ratio - The relationship between the volume of water in a stream and the volume of incoming water. It affects the ability of the stream to assimilate waste.

Dinocap - A fungicide used primarily by apple growers to control summer diseases. EPA proposed restrictions on its use in 1986 when laboratory tests found it caused birth defects in rabbits.

Dinoflagellates - Flagellated, photosynthetic, marine protists. They are very small in size and are components of plankton, a major food source at the bottom of the marine food chain.

Dinoseb - An herbicide that is also used as a fungicide and insecticide. It was banned by EPA in 1986 because it posed the risk of birth defects and sterility.

Dioxin - A family of compounds known chemically as dibenzo-p-dioxins. Concern about them arises from their potential toxicity and contaminants in commercial products. Tests on laboratory animals indicate that it is one of the more toxic man-made compounds.

Dip Tank - Generally metal or concrete units that range in size from 50 to 500 gallons or more. The tanks are

used to clean parts prior to treatment or to coat parts with various materials including metals and plastics.

Direct Exposure Pathway - An exposure pathway where the point of exposure is at the source, without a release to any other medium.

Direct Filtration - A method of treating water which consists of the addition of coagulant chemicals, flash mixing, coagulation, minimal flocculation, and filtration. Sedimentation is not used.

Direct Runoff - Water that flows over the ground surface or through the ground directly into streams, rivers, and lakes.

Direct-Reading Instruments - Provide information at the time of sampling. They are used to detect and monitor flammable or explosive atmospheres, oxygen deficiency, certain gases and vapors, ionizing radiation, and free product.

Discharge - 1) Flow of surface water in a stream or canal or the outflow of groundwater from a flowing artesian well, ditch, or spring. 2) Discharge of liquid effluent from a facility or of chemical emissions into the air through designated venting mechanisms. 3) As defined by section 311 (a)(2) of the CWA, includes but is not limited to, any spilling, leaking, pumping, pouring, emitting, emptying or dumping of oil, but excludes discharges in compliance with a permit under section 402 of the CWA, discharges resulting from circumstances identified and reviewed and made a part of the public record with respect to a permit issued or modified under section 402 of the CWA, and subject to a condition in such permit, or continuous or anticipated intermittent discharges from a point source, identified in a permit or permit application under section 402 of the CWA, that are caused by events occurring within the scope of relevant operating or treatment systems. 4) For purposes of the NCP, discharge also means threat of discharge.

Disinfectant - A chemical or physical process that kills pathogenic organisms in water. Chlorine is often used to disinfect sewage treatment effluent, water supplies, wells, and swimming pools.

Dispersant - A chemical agent used to break up concentrations of organic material such as spilled oil.

Dispersion - Hydrodynamic dispersion; the process whereby a contaminant dissolved in groundwater spreads out in the direction coincident to and perpendicular to groundwater flow, causing the contaminant to become diluted; the sum of the effects of mechanical mixing and molecular diffusion on a dissolved contaminant that results in dilution of the contaminant. The mixing results from differences in flow path length and velocity for different molecules.

Dispersivity - A property that quantifies dispersion in a medium.

Disposables - Consumer products, other items, and packaging used once or a few times and discarded.

Disposal - Final placement or destruction of toxic, radioactive, or other wastes; surplus or banned pesticides or other chemicals; polluted soils; and drums containing hazardous materials from removal actions or accidental releases. Disposal may be accomplished through use of approved secure landfills, surface impoundments, land farming, deep-well injection, ocean dumping, or incineration.

Dissolved Metals - Analyte elements which have not been digested prior to analysis and which will pass through a 0.45 µm filter.

Dissolved Oxygen (DO) - The oxygen freely available in water, vital to fish and other aquatic life and for the prevention of odors. DO levels are considered a very important indicator of a water body's ability to support desirable aquatic life. Secondary and advanced waste treatment are generally designed to ensure adequate DO in waste-receiving waters.

Dissolved Solids - Disintegrated organic and inorganic material in water. Excessive amounts make water unfit to drink or use in industrial processes. Generally noticeable in concentrations greater than 500 mg/L.

Distillation - The act of purifying liquids through boiling, so that the steam condenses to a pure liquid and the pollutants remain in a concentrated residue.

Diversion - 1) Use of part of a stream flow as a water supply. 2) A channel with a supporting ridge on the lower side constructed across a slope to divert water at a non-erosive velocity to sites where it can be used or disposed of. 3) Controlled movement of a hazardous material to an area where it will produce less harm.

Diversion Rate - The percentage of waste materials diverted from traditional disposal such as landfilling or incineration to be recycled, composted, or re-used.

DOD Priority Categories - Priorities for DERP funding determined on the basis of relative risk (site priorities) and a hierarchy of site actions (action priorities) within each site priority.

Dosage/Dose - The actual quantity of a chemical administered to an organism or to which it is exposed.

Dose Response - How a biological organism's response to a toxic substance quantitatively shifts as its overall exposure to the substance changes (e.g., a small dose of carbon monoxide may cause drowsiness; a large dose can be fatal.)

Dose-Response Assessment - Estimating the potency of a chemical.

Dose-Response Relationship - The quantitative relationship between the amount of exposure to a substance and the extent of toxic injury or disease produced.

DOT Reportable Quantity - The quantity of a substance specified in US Department of Transportation regulations that trigger labeling, packaging and other requirements related to shipping such substances.

Downgradient - The direction that groundwater flows; similar to "downstream" for surface water.

Draft Permit - A preliminary permit drafted and published by EPA; subject to public review and comment before final action on the application.

Drainage Basin - The area of land that drains water, sediment, and dissolved materials to a common outlet at some point along a stream channel.

Drawdown (s) - 1) The drop in the water table when water is being pumped from a well. It is the vertical distance between the static and the pumping levels of the wells. 2) The amount of water used from a tank or reservoir. 3) The drop in the water level of a tank or reservoir.

Dredging - Removal of mud/sediment from the bottom of water bodies. This can disturb the ecosystem and causes silting that kills aquatic life. Dredging of contaminated muds can expose biota to heavy metals and other toxic compounds. Dredging activities may be subject to regulation under Section 404 of the Clean Water Act.

Drillers Log - The drillers record of material drilled through in the process of drilling a well.

Drinking Water Equivalent Level - Protective level of exposure related to potentially non-carcinogenic effects of chemicals that are also known to cause cancer.

Drinking Water Standard (DWS) - Concentration limits for certain elements and pollutants that may occur in drinking water; established by the Safe Drinking Water Act.

Drinking Water Supply - As defined by section 101(7) of CERCLA, any raw or finished water source that is or may be used by a public water system as defined in the Safe Drinking Water Act, or as drinking water by one or more individuals.

Dry Weight - The weight of a sample based on percent solids. The weight after drying in an oven.

Dump - A site used to dispose of solid waste without environmental controls.

Duplicate - Identical splits of individual samples which are analyzed by the laboratory to test for method reproducibility. Samples may be split in the laboratory.

E

Ecological Assessment - A qualitative and/or quantitative appraisal of the actual or potential effects of chemical(s) of concern on plants and animals other than people and domestic species.

Ecological Impact - The effect that a man-made or natural activity has on living organisms and their non-living (abiotic) environment.

Ecological Indicator - A characteristic of the environment that, when measured, quantifies magnitude of stress, habitat characteristics, degree of exposure to a stressor, or ecological response to exposure. The term is collective for response, exposure, habitat, and stressor indicators.

Ecological Risk Assessment (ERA) - The application of a formal framework, analytical process, or model to estimate the effects of human actions(s) on a natural resource and to interpret the significance of those effects in light of the uncertainties identified in each component of the assessment process. Such analysis includes initial hazard identification, exposure and dose response assessments, and risk characterization.

Ecology - The relationship of living things to one another and their environment, or the study of such relationships.

Ecosphere - The "bio-bubble" that contains life on earth, in surface waters, and in the air. See Biosphere.

Ecosystem - The interacting system of a biological community and its non-living environmental surroundings.

Ecosystem Structure - Attributes related to instantaneous physical state of an ecosystem; examples include species population density, species richness or evenness, and standing crop biomass.

Ecotone - 1) A habitat created by the juxtaposition of distinctly different habitats; an edge habitat. 2) An ecological zone or boundary where two or more ecosystems meet.

Effective Porosity for Flow (n_e or n_{ef}) - Represents the interconnected porosity of a material. In a porous material, some void spaces may be saturated but are not able to transmit water, and so are not available for flow. These spaces represent dead zones of immobile water. n_{ef} corrects the porosity (n) of a material to account for these dead spaces.

Effects Range-Low (ER-L) - In aquatic systems, concentrations of contaminants that below which adverse biological effects would rarely occur. Concentrations of contaminants between the ER-L

and the ER-M represent that adverse effects would occasionally occur.

Effects Range-Median (ER-M) - In aquatic systems, concentrations of contaminants that above which adverse biological effects would probably occur.

Effluent - Wastewater, treated or untreated, that flows out of a treatment plant, sewer, or industrial outfall. Generally refers to wastes discharged into surface waters.

Electric Log - The log of a well or borehole obtained by lowering electrodes in the hole and measuring various electrical properties of the geologic formations traversed.

Electron - A negatively charged subatomic particle that may be transferred between chemical species in chemical reactions. Every chemical molecule contains electrons and protons (positively charged particles).

Electron Acceptor - Relatively oxidized compounds which gain electrons from electron donors during cellular respiration and oxidation-reduction reactions, resulting in the release of energy to the cell and the reduction of the electron acceptor. Microorganisms obtain energy by transferring electrons from electron donors such as organic compounds (or sometimes reduced inorganic compounds such as sulfide) to an electron acceptor. Electron acceptors are compounds that are relatively oxidized and include oxygen, nitrate, iron (III), manganese (IV), sulfate, carbon dioxide, or in some cases the chlorinated aliphatic hydrocarbons such as tetrachloroethene (PCE), trichloroethene (TCE), dichloroethene (DCE) and vinyl chloride (VC).

Electron Donor - Organic carbon, or reduced inorganic compounds, which give electrons to electron acceptors during cellular respiration and oxidation-reduction reactions, resulting in the release of energy to the cell, and the oxidation of the electron donor. Electron donors are relatively reduced and include fuel hydrocarbons, less chlorinated solvents like vinyl chloride, and native organic carbon.

Electrophile - A reactive species that accepts an electron pair.

Elimination - Chemical reaction where two groups such as chlorine and hydrogen are lost from adjacent carbon atoms and a double bond is formed in their place.

EMAP Data - Environmental monitoring data collected under the auspices of the Environmental Monitoring and Assessment Program. All EMAP data share the common attribute of being of known quality, having been collected in the context of explicit data quality objectives (DQOs) and a consistent quality assurance program.

Emergency (Chemical) - A situation created by an accidental release or spill of hazardous chemicals that poses a threat to the safety of workers, residents, the environment, or property.

Emerging Technology - A technology in the developmental stage (pilot-scale testing, bench-scale study) of production.

Emission - Pollution discharged into the atmosphere from smokestacks, other vents, and surface areas of commercial or industrial facilities; from residential chimneys; and from motor vehicle, locomotive, or aircraft exhausts.

Endangered Species - Animals, birds, fish, plants, or other living organisms threatened with extinction by man-made or natural changes in their environment. Requirements for declaring a species endangered are contained in the Endangered Species Act.

Endangerment Assessment - A study to determine the nature and extent of contamination at a site on the National Priorities List and the risks posed to public health or the environment. EPA or the state conduct the study when a legal action is to be taken to direct potentially responsible parties to clean up a site or pay for it. An endangerment assessment supplements a remedial investigation.

Endrin - A pesticide toxic to freshwater and marine aquatic life that produces adverse health effects in domestic water supplies.

Energy Recovery - Obtaining energy from waste through a variety of processes (e.g., combustion.)

Enforceable Requirements - Conditions or limitations in permits issued under the Clean Water Act, Section 402 or 404 that, if violated, could result in the issuance of a compliance order or initiation of a civil or criminal action under federal or applicable state laws. If a permit has not been issued, the term includes any requirement which, in the Regional Administrator's judgment, would be included in the permit when issued. Where no permit applies, the term includes any requirement which the Regional Administrator determines is necessary for the best practical waste treatment technology to meet applicable criteria.

Enforcement - EPA, state, or local legal actions to obtain compliance with environmental laws, rules, regulations, or agreements and/or obtain penalties or criminal sanctions for violations. Enforcement procedures may vary, depending on the requirements of different environmental laws and related implementing regulations. Under CERCLA, for example, EPA will seek to require potentially responsible parties to clean up a Superfund site, or pay for the cleanup, whereas under the Clean Air Act the agency may invoke sanctions against cities failing

to meet ambient air quality standards that could prevent certain types of construction or federal funding. In other situations, if investigations by EPA and state agencies uncover willful violations, criminal trials and penalties are sought.

Enforcement Decision Document (EDD) - A document that provides an explanation to the public of EPA's selection of the cleanup alternative at enforcement sites on the National Priorities List. Similar to a Record of Decision.

Engineering Controls - Modifications to a site or facility (for example, slurry walls, capping, and point of use water treatment) to reduce or eliminate the potential for exposure to a chemical(s) of concern.

Enrichment - The addition of nutrients (e.g., nitrogen, phosphorus, carbon compounds) from sewage effluent or agricultural runoff to surface water, greatly increases the growth potential for algae and other aquatic plants. However, too much can be harmful.

Entrain - To trap chemicals and particles in water either mechanically through turbulence or chemically through a reaction.

Environment - 1) As defined by section 101(8) of CERCLA, includes the navigable waters, the waters of the contiguous zone, and the ocean waters of which the natural resources are under the exclusive management authority of the U.S., and any other surface water, groundwater, drinking water supply, land surface or subsurface strata, ambient air, or fish, wildlife or biota within the U.S. or under jurisdiction of the U.S. 2) The sum of all external conditions affecting the life, development and survival of an organism.

Environmental Assessment (EA) - An environmental analysis prepared pursuant to the National Environmental Policy Act to determine whether a federal action would significantly affect the environment and thus require a more detailed environmental impact statement.

Environmental Audit - An independent assessment of the current status of a party's compliance with applicable environmental requirements or of a party's environmental compliance policies, practices, and controls.

Environmental Baseline Survey for Lease/Transfer (EBSL/EBST) - An evaluation of the environmental suitability of a parcel for lease or transfer.

Environmental Contamination - The release of hazardous substances, or the potential release of a discarded hazardous substance, in a quantity which is, or may become, injurious to the environment, or the public health, safety or welfare.

Environmental Equity - Equal protection from environmental hazards of individuals, groups or communities regardless of race, ethnicity, or economic status.

Environmental Exposure - Human exposure to pollutants originating from facility emissions. Threshold levels are not necessarily surpassed, but low level chronic pollutant exposure is one of the most common forms of environmental exposure. See Threshold Level.

Environmental Impact Statement (EIS) - A document required of federal agencies by the National Environmental Policy Act for major projects or legislative proposals significantly affecting the environment. A tool for decision making, it describes the positive and negative effects of the undertaking and cites alternative actions.

Environmental Indicator - A measurement, statistic or value that provides a proximate gauge or evidence of the effects of environmental management programs or of the state or condition of the environment.

Environmental Justice - The fair treatment of all races, cultures, incomes, and educational levels with respect to the development, implementation, and enforcement of environmental laws, regulations, and policies. Fair treatment implies that no population of people should be forced to shoulder a disproportionate share of the negative environmental impacts of pollution or environmental hazards due to a lack of political or economic strength.

Environmental Protection Agency (EPA) - Established in 1970 by Presidential Executive Order, bringing together parts of various government agencies involved with control of pollution.

Environmental Restoration (ER) - Cleanup and restoration of sites contaminated with hazardous substances during past production or disposal activities.

Environmental Restoration, Navy (ER,N) - The Navy established support funds for oversight of the IR Program. These support funds are intended to assist Installations in meeting oversight requirements. Replaced DERA Funding

Environmental Risk - The potential or likelihood of injury, disease, or death resulting from human exposure to a potential environmental threat.

Enzyme - Biologically produced, protein-based catalyst.

Ephemeral - Lasting a short time, transitory.

Epidemiology - Study of the distribution of disease, or other health-related states and events in human populations, as related to age, sex, occupation, ethnic, and economic status in order to identify and alleviate health problems and promote better health.

Epoxidation - A reaction wherein an oxygen molecule is inserted in a carbon-carbon double bond and an epoxide is formed.

Equilibrium - A condition that exists in a system when the phases of the system do not undergo any change of properties with the passage of time; the state in which the action of multiple forces produces a steady balance, resulting in no change overall, over time.

Equilibrium Species - 1) Species whose population exists in equilibrium with resources and at a stable density. 2) A species that has a life history characterized by long life, long development time to reach maturity, low death rates, and few reproductive cycles per year.

Equipment Rinsate - The final analyte-free water rinse from equipment cleaning collected daily during a sampling event.

Equipotential - Equal potential (energy).

Equipotential Lines - Lines of equal potential (energy). Water flows from areas of higher potential towards areas of lower potential.

Equivalent Method - Any method of sampling and analyzing for chemicals which has been demonstrated to the EPA Administrator's satisfaction to be, under specific conditions, an acceptable alternative to normally used reference methods.

Erosion - The wearing away of land surface by wind or water, intensified by land-clearing practices related to farming, residential or industrial development, road building, or logging.

Estuary - 1) A semi-enclosed coastal body of water that has a free connection with the open sea and within which seawater is measurably diluted with fresh water from land drainage. 2) Regions of interaction between rivers and near-shore ocean waters, where tidal action and river flow mix fresh and salt water. Such areas include bays, mouths of rivers, salt marshes, and lagoons. These brackish water ecosystems shelter and feed marine life, birds, and wildlife. See Wetlands.

Ethanol - An alcohol used as an alternative automotive fuel derived from grain and corn; usually blended with gasoline to form gasohol.

Ethylene Dibromide (EDB) - A chemical used as an agricultural fumigant and in certain industrial processes. Extremely toxic and found to be a carcinogen in laboratory animals, EDB has been banned for most agricultural uses in the United States.

Evacuation - A prolonged precautionary stay away from an area affected by a hazardous material.

Evapotransporation - The process by which surface water, soils, and plants release water vapor to the atmosphere through evaporation and transpiration.

Ex Situ - Refers to a technology or process for which contaminated material must be removed from the site of contamination for treatment. For example, soil must be excavated or groundwater must be pumped to an above ground treatment system. Antonym - In Situ.

Exceedence - Violation of the pollutant levels permitted by environmental protection standards.

Exchange Capacity - A quantitative measure of the surface charge of a substance, reported in equivalents of exchangeable ions per unit weight of the solid.

Exclusion Zone (EZ) - The area surrounding an operation which may be immediately dangerous to life and health. Requires complete, appropriate protective clothing and equipment. Entry requires approval by the Site Superintendent or a designated sector officer. Complete back-up and rescue teams must be in place at the perimeter before operations begin.

Exempt Solvent - Specific organic compounds not subject to requirements of regulation because they are deemed by EPA to be of negligible photochemical reactivity.

Exempted Aquifer - Underground bodies of water defined in the Underground Injection Control program as aquifers that are potential sources of drinking water though not being used as such, and thus exempted from regulations barring underground injection activities.

Exemption - A state with primacy may relieve a public water system from a requirement respecting an MCL, treatment technique, or both by granting an exemption if the system cannot comply due to compelling economic or other factors, the system was in operation on the effective date of the requirement or MCL, and the exemption will not create an unreasonable public health risk. See Variance.

Exogenous - 1) Derived or developed from external causes or locations. 2) For bioremediation, microorganisms from other locations, whose effectiveness has been tested and added to a site for remediation.

Exotic Species - A species that is not indigenous to a region.

Expanding Plume - The situation where a groundwater plume is continuing to move outward or downgradient from the source area.

Explosive Limits - The amounts of vapor in the air that form explosive mixtures; limits are expressed as lower and upper limits and give the range of vapor concentrations in air that will explode if an ignition source is present. The limits differ depending on the chemical vapor present.

Exposure - Contact of an organism with a chemical or physical agent. Exposure is quantified as the amount of the agent available at the exchange boundaries of the organism (e.g., skin, lungs or gut) and available for absorption.

Exposure Assessment - The determination or estimation (qualitative or quantitative) of the method, magnitude, frequency, duration, and route of exposure.

Exposure Event - An incident of contact with a chemical or physical agent. An exposure event can be defined by time (e.g., day, hour) or by the incident (e.g., eating a single meal of contaminated fish).

Exposure Incident - A specific eye, mouth, other mucous membrane, non-intact skin, or parental contact with blood or other potentially infectious materials.

Exposure Indicator - A characteristic of the environment measured to provide evidence of the occurrence or magnitude of a response indicator's exposure to a chemical or biological stress.

Exposure Level (EL) - The amount (concentration) of a chemical at the absorptive surfaces of an organism.

Exposure Pathway - The course a chemical or physical agent takes from a source to an exposed organism. An exposure pathway describes a unique mechanism by which an individual or population is exposed to chemicals or physical agents at, or originating from, a site. Each exposure pathway includes a source or release from a source, an exposure point, and an exposure route. If the exposure point differs from the source, a transport/exposure medium (e.g., air) or media (in cases of intermedia transfer) also is included.

Exposure Point - A location of potential contact between an organism and a chemical or physical agent.

Exposure Route - The manner in which a chemical or physical agent comes in contact with an organism (i.e., by ingestion, inhalation, or dermal contact).

Extractable - A compound that can be partitioned into an organic solvent from the sample matrix and is amenable to gas chromatography. Extractables include semivolatile (BNA) and pesticide/PCB compounds.

Extraction Procedure (EP Toxic) - Determining toxicity by a procedure which simulates leaching; if a certain concentration of a toxic substance can be leached from a waste, that waste is considered hazardous, i.e., "EP Toxic." Replaced by the TCLP.

Extremely Hazardous Substances - Any of 406 chemicals identified by EPA as toxic, and listed under SARA Title III. The list is subject to periodic revision.

F

Facility - As defined by CERCLA, any building, structure, installation, pipe or pipeline, well, pit, pond, lagoon, impoundment, ditch, landfill, storage container, motor vehicle, rolling stock, or aircraft; or any site or area where hazardous substances have been deposited, stored, disposed of, placed, or otherwise come to be located.

Facultative - A microbial trait enabling aerobic or anaerobic respiration, depending on environment.

Facultative Anaerobes - Microorganisms that use and prefer oxygen when it is available, but can also use alternate electron acceptors such as nitrate under anaerobic conditions when necessary.

Falling Head Test - A type of Slug Test where a solid or known volume of water is quickly added to an aquifer so that the falling head (water level in the well) can be monitored to determine the hydraulic conductivity.

Fast Track Cleanup - An approach to the cleanup of contamination at closing bases or sites where the transfer of property is required quickly. Parcels with contamination below cleanup levels will be identified quickly and made available for transfer.

Feasibility Study (FS) - Based on data collected during the remedial investigations, options for final cleanup actions or remediation are developed and evaluated. The most feasible option that satisfies the applicable or relevant and appropriate requirements for mitigating confirmed environmental contamination is then recommended. The FS is divided into two phases - initial screening of alternatives, and detailed analysis of alternatives. The detailed analysis considers the following nine criteria required by the NCP: 1) Overall Protection of Human Health and the Environment, 2) Compliance with ARARs, 3) Long-Term Effectiveness and Permanence; 4) Reduction of Toxicity, Mobility, and Volume Through Treatment, 5) Short-Term Effectivenss, 6) Implementability, 7) Cost, 8) Community Acceptance, and 9) State Acceptance.

Fecal Coliform Bacteria - Bacteria found in the intestinal tracts of mammals. Their presence in water or sludge is an indicator of pollution and possible contamination by pathogens.

Federal Agency Hazardous Waste Compliance Docket - Established by Congress under SARA to identify Federal facilities that must be evaluated for potential inclusion on the NPL and compile and maintain information on the cleanup status of these sites.

Federal Facilities Agreement (FFA) - Intended to establish roles and responsibilities and to improve communication between all parties by allowing EPA and the state to review all work in support of remedy selection; at an NPL site, the FFA outlines the working relationship between states, EPA, and the Navy. The FFA is a legal agreement governing the CERCLA and RCRA administrative process for cleanup. An FFA will become an Interagency Agreement (IAG) when the statutory requirements are incorporated after the Record of Decision (ROD).

Federal Register (FR) - A daily publication that acts as the official notice board for Presidential and federal agency documents. It contains documents of general applicability and legal effect (e.g. meeting notices and agency requests for information); documents required to be published by statute or regulation (proposed rules, final rules); and certain Presidential documents (e.g. proclamations and executive orders). Documents published in the FR as codified regulations keep the CFR current. These documents make changes to the corresponding CFR volumes.

Fermentation - Microbial metabolism in which a particular compound is used both as an electron donor and an electron acceptor resulting in the production of oxidized and reduced daughter products.

Field Blank - Blanks are collected and analyzed to determine the level of contamination introduced into the sample due to sampling technique. They may consist of the source water used in decontamination and steam cleaning. At minimum, one sample from each event and each source of water must be collected and analyzed.

Field Duplicate/Split - 1) Samples that have been divided into two or more portions while in the field. Each portion is then carried through the remaining steps in the measurement process. A sample may be duplicated in the field or at different points in the analytical process. For field duplicated samples, precision information would be gained on homogeneity, handling, shipping, storage, preparation, and analysis. 2) Duplicate samples divided into two parts and sent to different laboratories and subjected to the same environmental conditions and steps in the measurement process to test the labs.

Filling - Depositing dirt, mud, or other materials into aquatic areas to create more dry land, usually for agricultural or commercial development purposes, often with ruinous ecological consequences.

Filter Strip - Strip or area of vegetation used for removing sediment, organic matter, and other pollutants from runoff and waste water.

Filtration - A treatment process, under the control of qualified operators, for removing solid (particulate) matter from water by means of porous media such as sand or a man-made filter; often used to remove particles containing pathogens.

Final Action - Those removal actions that achieve the final cleanup objectives, considering long-term effectiveness and permanence, for the particular site, media, or operable unit. Except for O & M and possibly a five-year review, final actions require no additional study or action after the final actions are complete.

Financial Assurance for Closure - Documentation or proof that an owner or operator of a facility such as a landfill or other waste repository is capable of paying the projected costs of closing the facility and monitoring it afterwards as provided in RCRA regulations.

Finding of No Significant Impact (FNSI) - A document prepared by a federal agency showing why a proposed action would not have a significant impact on the environment and thus would not require preparation of an Environmental Impact Statement. A FNSI is based on the results of an environmental assessment.

Finding of Suitability for Lease/Transfer (FOSL/FOST) - Documents that the EBSL/EBST has determined that the subject property is suitable for lease or transfer by deed for the intended purposes.

First Draw - The water that comes out when a tap is first opened, likely to have the highest level of lead contamination from plumbing materials.

First Order Reaction - A chemical reaction in which an increase (or decrease) in reactant concentration results in a proportional increase (or decrease) in the rate of the reaction.

Fix, sample - A sample is "fixed" in the field by adding chemicals that prevent water quality indicators of interest in the sample from changing before laboratory measurements are made.

Flammable - Describes any solid, liquid, vapor, or gas that ignites easily and burns rapidly.

Flammable Liquid - A liquid that gives off vapors readily ignitable at room temperature. Defined by the NFPA and DOT as a liquid with a flash point below 100°F (38°C).

Flash Point (FLP) - The minimum temperature at which a liquid gives off enough vapors that will ignite

and flash-over but will not continue to burn without the addition of more heat.

Flocculation - Process by which clumps of solids in water or sewage aggregate through biological or chemical action so they can be separated from water or sewage.

Floodplain - The flat or nearly flat land along a river or stream or in a tidal area that is covered by water during a flood.

Flow Rate - The rate at which a fluid escapes from a unit area. Such measurements are made of liquid waste, effluent, and surface water movement.

Flowing Well - A well having sufficient artesian pressure head to discharge water above the land surface.

Flowmeter - A gauge indicating the velocity of wastewater moving through a treatment plant, or of any liquid moving through various industrial processes.

Fluoride - A general reference to compounds containing fluorine. Presence of about 1.0 mg/L is beneficial for reduction of dental cavities. Concentrations greater than 1.8 mg/L may cause mottling of teeth.

Fluorine (F) - The lightest of the halogens that can substitute for hydrogen in many organic compounds. The resulting compounds are generally less flammable but more toxic and persistent in the environment.

Fluorocarbons (FCs) - Any of a number of organic compounds analogous to hydrocarbons in which one or more hydrogen atoms are replaced by fluorine. Once used in the United States as a propellant for domestic aerosols, they are now found mainly in coolants and some industrial processes. FCs containing chlorine are called chlorofluorocarbons (CFCs). They are believed to be modifying the ozone layer in the stratosphere, thereby allowing more harmful solar radiation to reach the Earth's surface.

Flush - 1) To open a cold-water tap to clear out all the water which may have been sitting for a long time in the pipes. In new homes, to flush a system means to send large volumes of water gushing through the unused pipes to remove loose particles of solder and flux. 2) To force large amounts of water or other liquid to clean out piping or tubing, storage or process tanks.

Fluvial/Deltaic - Pertaining to rivers, streams, ponds, or river deltas.

Flux - A flowing or flow. For example, the flow of water through a pumping well can be called the flux.

Fly Ash - Non-combustible residual particles expelled by flue gas.

Food Chain - A sequence of organisms, each of which uses the next, lower member of the sequence as a food source.

Formaldehyde (CH_20) - A colorless, pungent, and irritating gas, used chiefly as a disinfectant, preservative, and in synthesizing other compounds like resins.

Formation - A unit of geologic mapping consisting of an identifiable rock material that also has lateral or vertical continuity.

Formerly Used Defense Sites (FUDS) - The FUDS process parallels the IR Program process phases, but the program structure is different. FUDS has two major components: inventory and remediation. In the inventory phase, projects are investigated to determine if the site is eligible. The remediation phase includes all of the components of the IR Program. The FUDS Program is implemented by the Army Corps of Engineers.

Fossil Fuel - Fuel derived from ancient organic remains, e.g., peat, coal, crude oil, and natural gas.

Fracture - Generally any break in a rock, whether or not it causes displacement, due to mechanical failure by stress; includes cracks, joints and faults.

Free Product - Organic contaminant existing as a separate liquid phase.

Freeboard - 1) Vertical distance from the normal water surface to the top of the confining wall. 2) The vertical distance from the sand surface to the underside of a trough in a sand filter.

Fresh Water - Water that generally contains less than 1,000 mg/L of dissolved solids.

Friable - Capable of being crumbled, pulverized, or reduced to powder by hand pressure.

Fuel Efficiency - The proportion of the energy released on combustion of a fuel that is converted into useful energy.

Fully Penetrating Well - A well in which the screened length is equal to the saturated thickness of the aquifer.

Fungi - (Singular: Fungus) Molds, mildews, yeasts, mushrooms, and puffballs, a group of organisms lacking in chlorophyll (i.e., are not photosynthetic) and which are usually non-mobile, filamentous, and multicellular. Some grow in soil, others attach themselves to decaying trees and other plants whence they obtain nutrients. Some are pathogens, others stabilize sewage and digest composted waste.

Future Liability - Refers to potentially responsible parties' obligations to pay for additional response activities beyond those specified in the Record of Decision or Consent Decree.

G

Game Fish - Species like trout, salmon, or bass, caught for sport. Many of them show more sensitivity to environmental change than "rough" fish.

Gamma Ray Log - A method of logging wells or boreholes by observing the natural radioactivity of rocks through which the hole passes.

Gas Chromatograph/Mass Spectrometer (GC/MS) - Highly sophisticated instrument that identifies the molecular composition and concentrations of various chemicals in water and soil samples.

Generator - 1) A facility or mobile source that emits pollutants into the air or releases hazardous waste into water or soil. 2) Any person whose act or process produces regulated medical waste or whose act first causes such waste to become subject to regulation. In a case where more than one person (e.g., doctors with separate medical practices) is located in the same building, each business entity is a separate generator.

Geographic Information System (GIS) - A computer system designed for storing, manipulating, analyzing, and displaying data in a geographic context.

Geological Log - A detailed description of all underground features (depth, thickness, type of formations) discovered during the drilling of a well.

Geophysical Log - Methods of logging by lowering a sensing device into a well to make a record which can be interpreted in terms of the rock's characteristics, the contained fluids, and of the construction of the well.

Geoprobe - A vehicle-mounted, hydraulically-powered, soil probing device that utilizes static force and percussion to advance small diameter sampling tools into the subsurface for collecting soil core, soil gas, or groundwater samples. A registered trademark of Kejr Engineering, Inc., Salina, Kansas.

Grab Sample - A single sample collected at a particular time and place that represents the composition of the media only at that time and place.

Graded - An engineering term pertaining to the variation of sizes in soil or an unconsolidated sediment; a soil consisting of particles of several or many sizes or having a uniform or equable distribution of particles from coarse to fine. Well graded materials have many sizes, whereas poorly graded materials are more uniform in size.

Gradient (i, dH/dX) - In an aquifer, the rate of change in head per unit distance of flow at a given point and in a given direction.

Granular Activated Carbon Treatment (GAC) - A filtering system often used in small water systems and individual homes to remove organics. GAC can be highly effective in removing elevated levels of radon from water.

Gravel Pack - Gravel placed around the outside of the well screen to increase the effective diameter of the well and therefore the well efficiency.

Ground Cover - Plants grown to keep soil from eroding.

Groundwater (GW) - The supply of fresh water found beneath the Earth's surface in the interstices between soil grains, in fractures, or in porous formations. Because groundwater is a major source of drinking water, there is growing concern over contamination from leaching agricultural or industrial pollutants or leaking underground storage tanks.

Groundwater Discharge - Groundwater entering near coastal waters which has been contaminated by landfill leachate, deep well injection of hazardous wastes, septic tanks, etc.

Groundwater Flow - The movement of water through openings in sediment and rock that occurs in the zone of saturation.

Groundwater Flow Velocity - A measure of the direction and speed of Groundwater Flow.

Groundwater Remediation - Treatment of groundwater to remove pollutants.

Gully Erosion - Severe erosion in which trenches are cut to a depth greater than 30 centimeters (a foot). Generally, ditches deep enough to cross with farm equipment are considered gullies.

H

Habitat - The place where a population (e.g., human, animal, plant, microorganism) lives, and its surroundings, both living and non-living.

Habitat Indicator - A physical attribute of the environment measured to characterize conditions necessary to support an organism, population, or community in the absence of pollutants, e.g., salinity of estuarine waters or substrate type in streams or lakes.

Half-Life - (physical, biological or effective) -1) The time for a quantity of material/chemical to diminish by a factor of half (because of nuclear decay events, biological elimination of the material, or both). The greater the half-life, the more persistent a material/chemical is likely to be. For example, the biochemical half-life of DDT in the environment is 15 years, Radium is 1,580 years. 2) The time required for half of the atoms of a radioactive element to undergo self-transmutation or decay. 3) The time required for the elimination of one half a total dose from the body.

Halogen - Any of a group of five chemically-related, nonmetallic elements that includes bromine, fluorine, chlorine, iodine, and astatine. Can combine with metals to form salts or substitute for hydrogen in many organic compounds. The resultant halogenated compound is generally less flammable but more toxic.

Halogenated - Organic compounds containing one or more halogens substituted for hydrogen. The resulting substituted compound is generally less flammable but more toxic.

Halon - Bromine-containing compounds with long atmospheric lifetimes whose breakdown in the stratosphere causes depletion of ozone. Halons are used in fire-fighting.

Hand Auger Drilling - Hand drilling by rotating a spiral channel supported on a shaft.

Hardness - Characteristic of alkaline water caused by the presence of various salts. Hard water may interfere with some industrial processes and prevent soap from lathering.

Hauler - Waste collection company that offers refuse or waste removal service; many will also collect recyclables.

Hazard Communication Standard - An OSHA regulation that requires chemical manufacturers, suppliers, and importers to assess the hazards of the chemicals that they make, supply, or import, and to inform employers, customers, and workers of these hazards through Material Safety Data Sheets.

Hazard Evaluation - A component of risk evaluation that involves gathering and evaluating data on the types of health injury or disease that may be produced by a chemical and on the conditions of exposure under which such health effects are produced.

Hazard Identification - Determining if a chemical can cause adverse health effects in humans and what those effects might be.

Hazard Index (HI) - The sum of more than one Hazard Quotient for multiple substances and/or multiple exposure pathways. The HI is calculated separately for chronic, subchronic and shorter-duration exposures. The HI indicates the risk from the presence of multiple substances at one site, or exposures to the same chemicals through multiple media and pathways.

Hazard Index, Total (HI_T) - Sum of media specific Hazard Quotients for non-carcinogens.

Hazard Quotient (HQ) - The ratio of a single substance exposure level over a specified time period to a reference dose for that substance derived from a similar exposure period. Indicates the hazard or risk from exposure to that substance.

Hazardous Air Pollutants (HAP) - Air pollutants which are not covered by ambient air quality standards but which, as defined in the Clean Air Act, may reasonably be expected to cause or contribute to irreversible illness or death. Such pollutants include asbestos, beryllium, mercury, benzene, coke oven emissions, radionuclides, and vinyl chloride.

Hazardous Chemical - An EPA designation for any hazardous material requiring an MSDS under OSHA's Hazard Communication Standard. Such substances are capable of producing fires and explosions or adverse health effects like cancer and dermatitis. Hazardous chemicals are distinct from hazardous waste. See Hazardous Waste.

Hazardous Material (HM) - Any material which, because of its quantity, concentration, or physical, chemical, or infectious characteristics may pose a substantial hazard to human health or the environment when released or spilled.

Hazardous Ranking System (HRS) - The principle screening tool used by EPA to evaluate risks to public health and the environment associated with abandoned or uncontrolled hazardous waste sites. The HRS calculates a score based on the potential of hazardous substances spreading from the site through the air, surface water, or groundwater, and on other factors such as density and proximity of human population. This score is the primary factor in deciding if the site should be on the National Priorities List and, if so, what ranking it should have compared to other sites on the list.

Hazardous Ranking System, Revised (HRS 2) - The method used by EPA to evaluate the relative potential of hazardous substance releases to cause health or safety problems, or ecological or environmental damage. It is the primary mechanism used by EPA to place sites on the NPL. The EPA bases the score on evaluation of three contaminant migration pathways. A score of 28.50 or above will require the site to be placed on the NPL. The score is based on such factors as amount and toxicity of contaminants, potential mobility, pathways for human exposure and proximity of population centers. EPA issued the HRS in 1990, and it became effective in March 1991. The revised HRS (HRS 2) incorporates SARA requirements and improvements identified by EPA and the public including an assessment of ecological effects.

Hazardous Substance (HS) - 1) Any material that poses a threat to human health and/or the environment. Typical hazardous substances are toxic, corrosive, ignitable, explosive, or chemically reactive. 2) Any substance designated by EPA to be reported if a designated quantity of the substance is spilled in the

waters of the United States or if otherwise released into the environment.

Hazardous Waste (HW) - 1) A solid waste or combination of solid wastes which because of its quantity, concentration, or physical, chemical, or infectious characteristics may: A) Cause or contribute to an increase in mortality or to a serious, irreversible, or incapacitating reversible illness; or B) Pose a substantial present or potential hazard to human health or the environment when improperly treated, stored, transported, disposed of or otherwise managed. Hazardous wastes may be *listed* (named on a list within a regulation) or *characteristic* (exhibits one of the four characteristics: corrosive, toxic, ignitable or reactive). 2) By-products of society that can pose a substantial or potential hazard to human health or the environment when improperly managed.

Hazardous Waste Landfill - An excavated or engineered site where hazardous waste is deposited and covered.

Hazards Analysis - Procedures used to 1) identify potential sources of released hazardous materials from fixed facilities or transportation accidents; 2) determine the vulnerability of a geographical area to a release of hazardous materials; and 3) compare hazards to determine which present greater or lesser risks to a community.

Hazards Identification - Providing information on which facilities have extremely hazardous substances, what those chemicals are, how much there is at each facility, how the chemicals are stored, and whether they are used at high temperatures.

Head - 1) The elevation of the groundwater table above a specified point. 2) The height above a standard reference (datum) of the surface of a column of water or other liquid. Head is the sum of three components at a point: a) Elevation head, which is equal to the elevation of the point above a datum, b) Pressure head, which is the height of a column of static water that can be supported by static pressure at the point, and c) Velocity head, which is the height the kinetic energy of the liquid is capable of lifting the liquid.

Health Advisory Level - A non-regulatory health-based reference level of chemical traces (usually in ppm) in drinking water at which there are no adverse health risks when ingested over various periods of time. Such levels are established for one day, 10 days, long term and life-time exposure periods. They contain a large margin of safety.

Health Assessment - An evaluation of available data on existing or potential risks to human health posed by a Superfund site. The Agency for Toxic Substances and Disease Registry (ATSDR) of the Department of Health and Human Services (DHHS) is required to perform such an assessment at every site on the National Priorities List.

Health Based Cleanup Goal - A media-specific contaminant concentration derived from the risk assessment process; used as the goal for cleanup.

Health Effects Assessment Summary Tables (HEAST) - A tabular presentation of toxicity information and values for chemicals that is updated quarterly. It summarizes interim and verified RfDs and slope factors as well as other toxicity information for specific chemicals. It contains the most current sources of supporting toxicity information for chemicals that cannot be found in the IRIS.

Health Hazard - A chemical, mixture of chemicals or a pathogen for which there is statistically significant evidence, based on at least one study conducted in accordance with established scientific principles, that acute or chronic effects may occur in exposed personnel.

Heat Exhaustion (Heat Prostration) - A mild form of shock caused when the circulatory system begins to fail as a result of the body's inadequate effort to give off excessive heat.

Heatstroke - A severe and sometimes fatal condition resulting from the failure of the temperature-regulating capacity of the body. It is caused by prolonged exposure to the sun or high temperatures. Reduction or cessation of sweating is an early symptom. Body temperatures of 105°F or higher, rapid pulse, hot and dry skin, headache, confusion, unconsciousness, and convulsions may occur. Heatstroke is a TRUE MEDICAL EMERGENCY, requiring immediate transport to a medical facility.

Heavy Metals - Metallic elements with high atomic weights that can damage living things at low concentrations and tend to accumulate in the food chain, e.g., mercury, chromium, cadmium, arsenic, and lead.

Henry's Law Constant (H) - Provides a measure of the extent of chemical partitioning between air and water at equilibrium. The higher the constant, the more likely a chemical is to volatilize than to remain in water.

Heptachlor - An insecticide that was banned on some food products in 1975 and all food products in 1978. It was allowed for use in seed treatment until 1983. More recently it was found in milk and other dairy products in Arkansas and Missouri where dairy cattle were illegally fed treated seed.

Herbicide - A chemical pesticide designed to control or destroy plants, weeds, or grasses.

Herbivore - An animal that feeds on plants.

Heterogeneous - Pertaining to a substance having different characteristics in different locations. Non-uniform. For example, sand with intermittent clay lenses. Antonym - Homogeneous.

Heterotrophic Organisms - Consumers such as humans and animals, and decomposers such as bacteria and fungi, that are dependent on organic matter for food.

High-Density Polyethylene (HDPE) - A material used to make plastic bottles and other products that produces toxic fumes when burned.

High-to-Low Dose Extrapolation - Prediction of low exposure risk to humans from the measured high exposure, high risk data involving rodents.

Holding Pond - A pond or reservoir, usually made of earth, built to store runoff.

Holding Time - The elapsed time expressed in days from the date of receipt of the sample by the contractor until the date of its analysis.

Homogeneous - Pertaining to a substance having uniform characteristics throughout. Uniform. Antonym - Heterogeneous.

Hot Zone - See Exclusion Zone.

Household Waste (Domestic Waste) - Solid waste, composed of garbage and rubbish, which normally originated in a private home or apartment house. Domestic waste may contain a significant amount of toxic or hazardous waste.

Human Equivalent Dose - A dose which, when administered to humans, produces an effect equal to that produced by a dose in animals.

Human Exposure Evaluation - Describing the nature and size of the population exposed to a substance and the magnitude and duration of their exposure. The evaluation could concern past, current, or anticipated exposures.

Human Health Risk - The likelihood that a given exposure or series of exposures may have or will damage the health of individuals.

Hydraulic Conductivity (K) - A measure of the ability of an aquifer to transmit a fluid; it is expressed as the volume of water at the existing kinematic viscosity that will move in a unit time under a unit hydraulic gradient through a unit area measured at right angles to the direction of flow.

Hydraulic Gradient (i, dH/dX) - The gradient or slope of the water table, or of the potentiometric surface, in the direction of the greatest slope, generally expressed in feet per mile.

Hydrocarbons (HC) - Chemical compounds that consist entirely of carbon and hydrogen.

Hydrogen (H, H_2) - The lightest of the chemical elements, it forms organic compounds with carbon. The amount of dissolved hydrogen in groundwater can also indicate the redox state and pH of the local environment.

Hydrogen Sulfide (HS) - Gas emitted during organic decomposition. Also a byproduct of oil refining and burning. Smells like rotten eggs and, in heavy concentration, can kill or cause illness.

Hydrogenolysis - A reductive reaction in which a carbon-halogen bond is broken, and hydrogen replaces the halogen substituent.

Hydrogeologic Cycle - The natural processes recycling water from the atmosphere down to (and through) the earth and back to the atmosphere again.

Hydrogeology - The geology of groundwater, and related geological aspects of surface water, with particular emphasis on the chemistry and movement of water.

Hydrologic Cycle - Movement or exchange of water between the atmosphere and the earth.

Hydrology - The science that deals with the properties of the waters of the earth, their distribution on the surface and underground, and the circulation cycles involving evaporation, precipitation, flow, etc.

Hydrometer - An instrument for determining specific gravity. It can also be used as a grain size test, because grain size distribution affects the specific gravity of fluids according to the distribution present.

Hydrophilic - "Water-liking"; having a strong affinity for water. Substances that can interact favorably with polar water molecules.

Hydrophobic - "Water-fearing"; having a strong aversion for water. Substances that tend not to dissolve in water.

Hydropneumatic - A water system, usually small, in which a water pump is automatically controlled by the air pressure in a compressed air tank.

I

Identification Code or EPA I.D. Number - The unique code assigned to each generator, transporter, and treatment, storage, or disposal facility by the USEPA to facilitate identification and tracking of chemicals or hazardous waste.

Ignitable - 1) A liquid that has a flash point less than 140°F. 2) Capable of burning or causing a fire.

Immediately Dangerous to Life and Health (IDLH) - The maximum level to which a healthy individual can be exposed to a chemical for 30 minutes and escape without suffering irreversible health effects or impairing symptoms. Used as a "Level of Concern." See Level of Concern.

Imminent Threat - A threat posed by a site if human exposure in excess of applicable human health or environmental criteria is predictable prior to

implementation of an effective remedial action or an operable unit thereof.

Immiscible - Refers to liquids which do not form a single phase when mixed; e.g. oil and water. Synonym - Non-Aqueous Phase Liquid. Antonym - Miscible.

Impermeable - Not easily penetrated. The property of a material or soil that does not allow, or allows only with great difficulty, the movement or passage of water, particles or chemicals.

Incineration - A treatment technology involving destruction of waste by controlled burning at high temperatures, e.g., burning sludge to remove the water and reduce the remaining residues to a safe, non-burnable ash that can be disposed of safely on land, in some waters, or in underground locations.

Incinerator - Typically consists of a furnace and stack unit used for a variety of disposal activities including the controlled burning of medical waste, packaging and varieties of municipal waste.

Incompatible Waste - A waste unsuitable for mixing with another waste or material because it may react to form a hazard.

Incremental Carcinogenic Risk Level (ICR) - The potential for incremental carcinogenic human health effects due to exposure to the chemical(s) of concern.

Indicator - 1) In biology, an organism, species, or community whose characteristics show the presence of specific environmental conditions. 2) In chemistry, a substance that shows a visible change, usually of color, at a desired point in a chemical reaction. 3) A device that indicates the result of a measurement, e.g., a pressure gauge or a moveable scale.

Indigenous - 1) Living or occurring naturally in a specific area or environment, native. 2) For bioremediation, microorganisms already living at a site.

Indirect Exposure Pathway - An exposure pathway with at least one intermediate release to any media between the source and the point(s) of exposure (for example, chemicals of concern from soil through groundwater to the point(s) of exposure).

Indoor Air - The breathing air inside a habitable structure or conveyance.

Indurated - Rendered hard.

Industrial Waste - Unwanted materials from an industrial operation; may be liquid, sludge, solid, or hazardous waste.

Infauna - 1) Benthic organisms that live in or burrow through the bottom sediment. 2) Organisms living within a substrate.

Infiltration - 1) The penetration of water through the ground surface into sub-surface soil or the penetration of water from the soil into sewer or other pipes through defective joints, connections, or manhole walls. 2) The technique of applying large volumes of wastewater to land to penetrate the surface and percolate through the underlying soil. See Percolation.

Infiltration Gallery - Covers a wide range of subsurface groundwater collection systems. They are typically shallow in depth, constructed with open-jointed or perforated pipes that discharge collected water into a water-tight chamber from which the water is pumped to treatment facilities and into the distribution system. Usually located close to streams or ponds. Can also be used to collect water for remediation purposes after it has passed through an area of contamination as a type of washing method.

Infiltration Rate - The quantity of water than can enter the soil in a specified time interval.

Influent - Water, wastewater, or other liquid flowing into a reservoir, basin, or treatment plant.

Information Repositories - Collections of site information that include items which are related to the site, but may or may not be suitable for incorporation in the administrative record.

Ingestion - The introduction of a chemical into the body through the mouth. Inhaled chemicals may be trapped in saliva and swallowed. Exposed personnel should be prohibited from smoking, eating, or drinking except in designated rest areas after being decontaminated.

Inhalation - The introduction of chemical vapors or toxic products of combustion into the body by way of the respiratory system. Toxins may be absorbed into the bloodstream and carried to other internal organs, or they may affect the upper and/or lower respiratory tract. Resulting respiratory injuries include pulmonary edema and respiratory congestion. Inhalation is the most common exposure route and often the most damaging.

Initial Site Characterization (ISC) - Completed after discovery of a release from an Underground Storage Tank (UST) and after any initial abatement measures and the site check have been completed. The ISC should assemble information into a report on the site such as the nature and estimated quantity of release; surrounding populations; water quality, use and well locations; storm water/wastewater systems; climatology; land use; results of the site check and initial abatement measures; and results of any free product removals. Equivalent to a CERCLA Preliminary Assessment (PA).

Injection Well - A well into which fluids or gases are injected for purposes such as waste disposal, improving the recovery of crude oil, solution

mining, or delivering nutrients to speed biodegradation of chemicals in groundwater.

Injection Zone - A geological formation receiving fluids through a well.

In Line Filtration - Pre-treatment method in which chemical coagulants are added directly to the filter inlet pipe. The chemicals are mixed by the flowing water. Commonly used in pressure filtration installations. Eliminates need for flocculation and sedimentation.

Innovative Treatment Technologies - Newly invented processes that have been tested and used as treatments for hazardous waste or other contaminated materials, but still lack enough information about their cost and how well they work to predict their performance under a variety of operating conditions. They are often used because they can offer cost-effective, long-term solutions to cleanup problems, they may provide an alternative to land disposal or incineration, and are often more acceptable to surrounding communities than some established treatment technologies.

Inorganic Chemicals - Chemical substances of mineral origin, not usually having a carbon structure.

In Situ Remediation - A treatment process that can be operated within the site of contamination without bulk excavation. Antonym - Ex Situ.

In Situ Respiration Test - Test used to provide rapid field measurement of in situ biodegradation rates to determine the potential applicability of bioventing at a contaminated site and to provide information for a full-scale bioventing system design.

In Situ Stripping - Treatment system that removes or "strips" volatile organic compounds from contaminated ground or surface water by forcing an airstream through the water and causing the compounds to volatilize/evaporate.

Installation - The real property owned, formerly owned, or leased by the Navy, including a main base and any associated contiguous real properties identified by the same real property number.

Installation Restoration Program (IR, IRP) - Established in 1984 to help identify, investigate, and cleanup contamination on DOD properties; conducted under the auspices of CERCLA of 1980 and SARA of 1986; the DOD equivalent to the EPA Superfund program.

Institutional Controls - The restriction on use or access (for example, fences, deed restrictions, restrictive zoning) to a site or facility to eliminate or minimize potential exposure to a chemical(s) of concern.

Instrument Detection Limit - 1) Under ideal conditions, that concentration of analyte which produces an output signal twice the root mean square of the background noise. 2) Three times the standard deviation obtained for the analysis of a standard solution (each analyte in reagent water) at a concentration of 3x-5x instrument detection limit, on three nonconsecutive days with seven consecutive measurements per day.

Intake - A measure of exposure expressed as mass of a substance in contact with the exchange boundary per unit body weight per unit time (e.g., mg chemical/kg/day). Also termed the normalized exposure rate; administered dose, and applied dose.

Integrated Exposure Assessment - Cumulative summation (over time) of the magnitude of exposure to a toxic chemical in all media.

Integrated Risk Information System (IRIS) - A USEPA data base containing verified RfDs, slope factors and up-to-date health risk and USEPA regulatory information for numerous chemicals. IRIS is USEPA's preferred source for toxicity information for Superfund.

Interagency Agreements (IAG) - A formal agreement between the EPA, the state, and the Navy that establishes objectives, responsibilities, procedures, and schedules for remediation at NPL installations. The IAG must be made formal within 180 days of EPA's review of the RI/FS.

Interested Parties/Groups - Community members that live and/or work in the affected community that would be impacted by the release or potential release of a hazardous substance prior to, or as part of restoration activities at an IR site.

Interface - The common boundary between two substances such as water and a solid, water and a gas, or two separate liquids such as water and oil.

Interim Action - Those removal actions that only partially address a problem or only address the problem for a short time. Interim actions require further study and possibly action, in addition to the interim action. Interim actions are most appropriate to mitigate immediate threats while allowing time for studies to be conducted, as necessary to determine a final solution.

Interim Corrective Measure - A response action under RCRA to mitigate fire and safety hazards and to prevent further migration of the contaminant(s). It may be identified and implemented at any time during the study or design phase; limited in scope and addresses only areas or media for which a final remedy will be developed by the RI/FS process; should be consistent with the final remedy for a site.

Interim (Permit) Status (IS) - Period during which treatment, storage and disposal facilities coming under RCRA in 1980 are temporarily permitted to operate while awaiting a permanent permit.

Interim Remedial Action (IRA) - A response action under CERCLA to mitigate fire and safety hazards and to prevent further migration of the contaminant(s). It may be identified and implemented at any time during the study or design phase; limited in scope and addresses only areas or media for which a final remedy will be developed by the RI/FS process; should be consistent with the final remedy for a site.

Internal Standards - Compounds added to every standard, blank, matrix spike, matrix spike duplicate, sample (for volatile), and sample extract (for semivolatile) at a known concentration prior to analysis. Internal standards are used as the basis for quantitation of the target compounds.

Interstate Waters - Waters that flow across or form part of state or international boundaries, e.g., the Great Lakes, the Mississippi River, or coastal waters.

Interstices - The opening or pore spaces in a soil or rock formation. In an aquifer, they are filled with water.

Interstitial Monitoring - The continuous surveillance of the space between the walls of an underground storage tank.

Intrinsic - 1) Originating or due to causes within something. 2) Originating and occurring wholly within something.

Intrinsic Bioremediation - The in situ reduction of contaminant concentrations resulting from the destruction, loss, or dilution of contaminant mass (without human intervention) to levels that do not pose a risk to human health or the environment.

In-Well Aeration - The process of injecting gas into a well to produce an in-well airlift pump effect.

Ion - An electrically charged atom that can be drawn from waste water during electrodialysis.

Ion Exchange Treatment - A common water-softening method often found on a large scale at water purification plants that remove some organics and radium by adding calcium oxide or calcium hydroxide to increase the pH to a level where the metals will precipitate out.

Ionic Strength - A measure of the concentration and charge of ions in solution. The ionic strength of a solution affects the solubility of compounds, most often increasing the solubility. This means that in the environment, chemicals could be more soluble in a "salt" solution than in pure water.

Iron (Fe) - A malleable metal that is the fourth most abundant by weight of the elements that compose the earth's crust. It is naturally very abundant in the environment. Mobility of iron in water depends on its oxidation state, whether it is in the reduced form (II) or oxidized form (III). Iron (II) is generally more mobile in waters void of dissolved oxygen. Iron (III) is generally insoluble but can exist in natural organometallic or humic compounds and colloidal forms. The presence or lack of dissolved oxygen has little affect on iron (III), and this form of iron has little effect on aquatic life. The majority of iron is likely to settle and partition to bottom sediments. It can be transported great distances adsorbed to sediments however. Iron in soil has low mobility potential. Iron is an essential nutrient to humans.

Irreversible Effect - Effect characterized by the inability of the body to partially or fully repair injury caused by a toxic agent.

Irritant - A substance that can cause irritation of the skin, eyes, or respiratory system. Effects may be acute from a single high level exposure, or chronic from repeated low-level exposures to such compounds as chlorine, nitrogen dioxide, and nitric acid.

Isolation Procedure - The process of limiting the number of civilian and public service personnel exposed to a hazardous material.

Isomer - A compound with the same atomic composition and molecular weight as another compound but differing in molecular structure and chemical or physical properties. For example, graphite (pencil lead) and diamond are isomers of carbon. Both are composed of pure carbon, but exhibit very different physical properties.

Isotope - A variation of an element that has the same atomic number of protons but a different weight because of the number of neutrons. Various isotopes of the same element may have different radioactive behaviors, some are highly unstable.

Isotropic / Isotropy - Having identical properties in all directions.

K

Karst - A geologic formation of irregular limestone deposits with sinks, underground streams, and caverns.

Kinetic Energy - Energy possessed by a moving body as a result of its motion.

Kinetic Rate Coefficient - A number that describes the rate at which a water constituent such as a biochemical oxygen demand or dissolved oxygen rises or falls.

L

Laboratory Control Sample - A control sample of known composition. Aqueous and solid lab control samples are analyzed using the same sample preparation, reagents, and analytical methods employed for samples received.

Lagoon - 1) A shallow pond where sunlight, bacterial action, and oxygen work to purify wastewater; also used for storage of wastewater or spent nuclear fuel rods. 2) Shallow body of water, often separated from the sea by coral reefs or sandbars.

Land Application - Discharge of wastewater onto the ground for treatment or reuse. See Infiltration.

Land Ban - Phasing out of land disposal of most untreated hazardous wastes, as mandated by the 1984 HSWA amendments to RCRA.

Landfarming - 1) A disposal process in which hazardous waste deposited on or in the soil is naturally degraded by microbes. 2) A bioremediation technology in which contaminated soil or sediment is excavated and spread on a pan with a built-in system to collect any leachate. The soils are periodically turned over to mix air into the waste. Moisture, nutrients, temperature and pH are also controlled to optimize the biodegradation occurring

Landfills - 1) Sanitary landfills are disposal sites for non-hazardous solid wastes spread in layers, compacted to the smallest practical volume, and covered by material applied at the end of each operating day. 2) Secure chemical landfills are disposal sites for hazardous waste, selected and designed to minimize the chance of release of hazardous substances into the environment.

Langelier Index (LI) - An index reflecting the equilibrium pH of water with respect to calcium and alkalinity; used in stabilizing water to control both corrosion and scale deposition.

Large Quantity Generator - Person or facility generating more than 2200 pounds of hazardous waste per month. Such generators produce about 90 percent of the nation's hazardous waste, and are subject to all RCRA requirements.

Latency - Time from the first exposure of a chemical until the appearance of a toxic effect.

LC50/Lethal Concentration - Median level concentration, a standard measure of toxicity. It tells how much of a substance is needed to kill half of a group of experimental organisms in a given time. See LD50.

LD50/ Lethal Dose - The dose of a toxicant that will kill 50 percent of the test organisms within a designated period. The lower the LD50, the more toxic the compound.

Leachate - Water that collects contaminants as it trickles through wastes, pesticides or fertilizers. Leaching may occur in farming areas, feedlots, and landfills, and may result in hazardous substances entering surface water, groundwater, or soil.

Leachate Collection System - A system that gathers leachate and pumps it to the surface for treatment.

Leaching - The process by which soluble constituents are dissolved and filtered through the soil by a percolating fluid. See Leachate.

Lead (Pb) - A ductile, heavy metal. It occurs naturally as a trace constituent in rocks, soils, water, plants, animals and air. It is used widely in industry because of its softness, resistance to corrosion and radiation, and high density. It is used in storage batteries, gasoline additives, pigments, alloys, ammunition, and solder. Its use has been sharply restricted or eliminated by federal laws and regulations. Most lead entering natural waters will precipitate to the sediment bottom as carbonate or hydroxide compounds. However, at low pH and low organic conditions, it is in its most soluble, bioavailable and mobile form. Sorption is the dominant influence in soil. Mobility of lead in soil is low and therefore leaching to groundwater or runoff is not a predominant factor. Lead is not readily taken up by plants and does not appear to significantly bioaccumulate in most fish. Inhalation or ingestion of lead can cause neurological, cardiac and gastrointestinal problems. It is a Group B2, possible human carcinogen.

Lead Agency - The location where the master copy of the Administrative Record File/Administrative Record is established and maintained, generally the Engineering Field Division/Engineering Field Activity (EFD/EFA).

Leakance - The ratio of vertical hydraulic conductivity and the thickness of a confining bed; this term is used in the flow equations for leaky aquifers with vertical movement.

Leaky Aquifer - An aquifer bounded above and below by a semi-permeable layer so that water from the aquifer flows or leaks from the aquifer.

Legal Agreement - A means of setting project milestones; current DON environmental cleanup program funding policy requires incorporating relative risk evaluations and DON environmental restoration funding controls.

Leukogen - A substance that causes leukemia.

Lifetime Exposure - Total amount of exposure to a substance that a human would receive in a lifetime (usually assumed to be 70 years).

Lift - In a sanitary landfill, a compacted layer of solid waste and the top layer of cover material.

Ligands - The molecules surrounding a metal ion in a complex ion. See Chelate and Complexation.

Light Non-Aqueous Phase Liquid (LNAPL) - A liquid that does not dissolve in water, and so forms a separate phase, which is also lighter than water and therefore floats on the surface. Many petroleum products are LNAPLs.

Limited Degradation - An environmental policy permitting some degradation of natural systems but terminating at a level well beneath an established health standard.

Limiting Factor - A condition whose absence or excessive concentration is incompatible with the needs or tolerance of a species or population and which may have a negative influence on their ability to thrive and/or survive.

Limnology - The study of the physical, chemical, hydrological, and biological aspects of fresh water bodies.

Lindane - A pesticide that causes adverse health effects in domestic water supplies and is toxic to freshwater fish and aquatic life.

Liner - 1) A relatively impermeable barrier designed to keep leachate inside a landfill. Liner materials include plastic and dense clay. 2) An insert or sleeve for sewer pipes to prevent leakage or infiltration.

Lipid Solubility - The maximum concentration of a chemical that will dissolve in fatty substances. Lipid soluble substances are insoluble in water. They will very selectively disperse through the environment via uptake in living tissue.

Liquefaction - Changing a solid into a liquid.

Listed Waste - Wastes listed as hazardous under RCRA but which have not been subjected to the Toxicity Characteristic Listing Procedure because the dangers they present are considered self-evident.

Lithology - The large scale physical characteristics of rocks and sediments.

Lithotroph - An organism that uses inorganic carbon such as carbon dioxide or bicarbonate as a carbon source and an external energy source.

Littoral Zone - 1) That portion of a body of fresh water extending from the shoreline lakeward to the limit of occupancy of rooted plants. 2) The strip of land along the shoreline between the high and low water levels.

Long-Term Monitoring (LTM) - Site sampling and analysis required to confirm that site cleanup requirements continue to be met after the Remedial Action (RA) has been accomplished or that site contaminant levels continue to be below concentrations which require RA. LTM does not overlap (in time) with the RA nor with LTO (monitoring is included in RA or LTO in years where either of those phases is programmed).

Long-Term Operation (LTO) or Long-Term O&M – See Remedial Action Operation.

Lower Explosive Limit (LEL) - The concentration of a compound in air below which the mixture will not ignite.

Lowest Observed Adverse Effect Level (LOAEL) - In dose-response experiments, the lowest exposure level at which there are statistically or biologically significant increases in frequency or severity of adverse effects between the exposed population and its appropriate control group.

M

Macrofauna - A general term referring to benthic organisms more than 1 mm in size.

Magnesium (Mg) - An alkaline earth metal that is very abundant in the environment. Readily forms salts with various metals and halogens. When dissolved in water, it can be used to indicate salinity and alkalinity. Contributes to hard water in high concentrations. It is an essential nutrient for animals and humans. Not generally considered toxic.

Magnetic Separation - Use of magnets to separate ferrous materials from mixed municipal waste streams.

Manganese (Mn) - A brittle metal usually occurring in nature with other metals like iron. It is used in steel alloys, dry-cell batteries, electrical coils, other metallic fabrication applications, oxidizing agents, and as a food additive. It is an essential nutrient but can be harmful to the central nervous system in excessive amounts.

Manifest - The form used for identifying the quantity, composition, and the origin, routing, and destination of hazardous waste during its transportation from the point of generation to the point of disposal, treatment, or storage.

Manifest System - A procedure in which hazardous materials are identified and tracked as they are produced, treated, transported, and disposed of by a series of permanent, linkable, descriptive documents (e.g., manifests).

Margin of Safety - Maximum amount of exposure producing no measurable effect in animals (or studied humans) divided by the actual amount of human exposure in a population.

Marsh - A type of wetland that does not accumulate appreciable peat deposits and is dominated by herbaceous vegetation. Marshes may be either fresh or saltwater, tidal or non-tidal. See Wetlands.

Material Safety Data Sheet (MSDS) - A compilation of information required under the OSHA Communication Standard on the identity of hazardous chemicals, health, and physical hazards, exposure limits, precautions, and handling information. Section 311 of SARA requires facilities to submit MSDSs under certain circumstances.

Matrix - The predominant material comprising the sample to be analyzed. The most common matrices are water, soil/sediment, and sludge.

Matrix Spike (MS) - The process of adding a known amount of analyte to a sample and analyzing the sample. The amount of analyte recovered is calculated as a percent recovery. This technique is used to assess accuracy of analysis.

Matrix Spike Duplicate (MSD) - A second matrix spike is compared to the results of the first matrix spike to assess precision of the analysis.

Maximum Contaminant Level (MCL) - The maximum permissible level of a contaminant in water delivered to any user of a public system. MCLs are enforceable standards.

Maximum Contaminant Level Goal (MCLG) - Under the Safe Drinking Water Act, a non-enforceable concentration of a contaminant, set at the level at which no known or anticipated adverse effects on human health occur and which allows an adequate safety margin. The MCLG is usually the starting point for determining the regulated Maximum Contaminant Level. See Maximum Contaminant Level.

Maximum Tolerated Dose - The maximum dose that an animal species can tolerate for a major portion of its lifetime without significant impairment or toxic effect other than carcinogenicity.

Measurement Endpoint - Quantitative expressions of an observed or measured effect of Environmental Contaminants of Concern. They may be identical to assessment endpoints (e.g., measurement of abundance of fish), or they may be used as surrogates for assessment endpoints (e.g., toxicity test endpoints).

Mechanical Aeration - Use of mechanical energy to inject air into water to cause a waste stream to absorb oxygen.

Mechanical Stress - The result of a transfer of energy when one object physically contacts or collides with another. Indications would be punctures, gouges, breaks, or tears in the container.

Media - Specific environments, i.e., air, water, or soil, which are the subject of regulatory concern and activities.

Media-Specific Half-Life - Provides a relative measure of the persistence of a chemical in a given medium, although actual values can vary greatly depending on site-specific conditions. The greater the half-life, the more persistent a chemical is likely to be.

Medical Surveillance - A periodic comprehensive review of a worker's health status; acceptable elements of such surveillance program are listed in the Occupational Safety and Health Administration standards for asbestos.

Melting Point (MP) - The temperature at which a solid changes its phase to a liquid. This temperature is also the freezing point depending on the direction of the change. For mixtures, a melting point range may be given.

Mercury (Hg) - Exists as a silvery, heavy liquid or as a heavy metal. It forms various insoluble salts and complex compounds with organic and inorganic chemicals. It is used for amalgams, catalysts, electrical apparatuses, instruments such as thermometers and barometers, and in nuclear power plants. Mercury released to the environment will remain indefinitely. It does not biodegrade but can be biotransformed into various different states. Its solubility and state depends heavily on the pH and redox state of the local environment. The toxicity, mobility, solubility and other properties depend upon the state the mercury is in, for example whether it forms an insoluble salt with another element or whether it has formed a complex organometallic compound like methyl mercury, which is the most hazardous and stable state of mercury. Bioaccumulation is a major concern. See Heavy Metals.

Mesotrophic - Reservoirs and lakes which contain moderate quantities of nutrients and are moderately productive in terms of aquatic animal and plant life.

Metabolic Byproduct - A product of the reaction between an electron donor and an electron acceptor. Metabolic byproducts include volatile fatty acids, daughter products of chlorinated aliphatic hydrocarbons, methane, and chloride.

Metabolic Intermediate - A chemical produced by one step in a multistep biotransformation.

Metabolism - The chemical reactions in living cells that convert food sources to energy and new cell mass.

Metabolites - Any substances produced by biological processes, such as those from pesticides.

Meteorology - The science that deals with the atmosphere and atmospheric phenomena; the study of weather.

Methane (CH_4) - A colorless, nonpoisonous, flammable gas created by anaerobic decomposition of organic compounds.

Methanogen - A microorganism that exists in anaerobic environments and produces methane as the end product of its metabolism. Methanogens use carbon dioxide or simple carbon compounds such as methanol as an electron acceptor.

Methanol - An alcohol that can be used as an alternative fuel or as a gasoline additive. It is less volatile than gasoline; when blended with gasoline it lowers the

carbon monoxide emissions but increases hydrocarbon emissions. Used as pure fuel, its emissions are less ozone-forming that those from gasoline.

Method (Analytical) Qualifier - Symbols added as a suffix to analytical results to identify the analytical method used to measure the analyte: *A* - Flame Atomic Absorption (AA). *AS* - Semiautomated Spectrophotometric. *AV* - Automated Cold Vapor AA. *C* - Manual Spectrophotometric. *CV* - Manual Cold Vapor AA. *F* - Furnace AA. *NC* - Not calculated as per protocols. *NR* - The analyte is not required to be analyzed. *P* - ICP. *T* - Titrimetric.

Method Blank - Contaminant free water, or appropriate matrix, that is taken through the entire analytical process to determine if there is any contamination associated with the analytical procedures.

Method Detection Limit (MDL) - The minimum concentration of a substance that can be measured and reported with 99% confidence that the analyte concentration is greater than zero and is determined from analysis of a sample in a given matrix containing the analyte.

Methoxychlor - Pesticide that causes adverse health effects in domestic water supplies and is toxic to freshwater and marine aquatic life.

Microbial Growth - The activity and growth of microorganisms such as bacteria, algae, diatoms, plankton, and fungi.

Microclimate - The localized climate conditions within an urban area or neighborhood.

Microcosm - A laboratory vessel set up to resemble as closely as possible the conditions of a natural environment.

Micron (μm) - A unit of length equal to one millionth (10^{-6}) of a meter. Also called a micrometer.

Microorganism - Living organisms so small that individually they can usually only be seen through a microscope.

Migration Pathway - A pathway by which a hazardous material is transported at, or from, a disposal site.

Migration Pathway Factor (MPF) - A measure of the movement or potential movement of contamination away from the original source.

Mineralization - The complete conversion of an organic compound to inorganic products (principally water and carbon dioxide).

Mining of an Aquifer - Withdrawal of groundwater over a period of time that exceeds the rate of recharge to the aquifer.

Miscible - Two or more liquids or gases that can be mixed and will remain mixed under normal conditions, e.g., alcohol and water. Antonym - Immiscible.

Missed Detection - The situation that occurs when a test indicates that a tank is "tight" when in fact it is leaking.

Mitigation - Measures taken to reduce adverse impacts on the environment.

Mixed Waste - Waste that contains both hazardous waste and source, special nuclear, or by-product material subject to the Atomic Energy Act of 1954.

Mobile Incinerator Systems - Hazardous waste incinerators that can be transported from one site to another.

Mobile Source - Any non-stationary source of air pollution such as cars, trucks, motorcycles, buses, airplanes, locomotives, etc.

Modeling - An investigative technique using a mathematical or physical representation of a system or theory that accounts for all or some of its known properties. Models are often used to test the effect of changes of system components on the overall performance of the system.

Modifying Factor (MF) - In toxicity assessments, a number that reflects a professional assessment of additional uncertainties in the critical study and in the entire database for the chemical not explicitly addressed by the uncertainty factors.

Mole (mol) - A mass of a compound defined as Avogadro's Number (6.022×10^{23}) of atoms or molecules.

Molecular Weight (MW) - (mass) The sum of atomic masses (in atomic mass units 1 amu = mass of ^{12}C atom as standard) of the atoms present in a molecule.

Molecule - The smallest division of a compound that still retains or exhibits all the properties of the substance.

Monitoring - 1) Periodic or continuous surveillance or testing to determine the level of compliance with statutory requirements and/or pollutant levels in various media or in humans, plants, and animals. 2) Used to track the presence, migration, or threat posed by contaminants at a site; may be used at a site between response actions or when no other response action is appropriate until information or site status changes.

Monitoring Well (MW) - 1) A well used to obtain water quality samples or measure groundwater levels. 2) Well drilled at a hazardous waste management facility or Superfund site to collect groundwater samples for the purpose of physical, chemical, or biological analysis to determine the amounts, types, and distribution of contaminants in the groundwater beneath the site.

Monooxygenase - A microbial enzyme that catalyzes reactions in which one atom of the oxygen molecule

is incorporated into a product and the other atom appears in water.

Monte Carlo Simulation - A procedure to estimate the value and uncertainty of the result of a calculation when the result depends on a number of factors, each of which is also uncertain.

Morbidity - Rate of disease incidence.

Most Probable Number (MPN) - The most probable number of organisms per unit volume of sample water.

Mudballs - Round material that forms in filters and gradually increases in size when not removed by backwashing.

Mulch - A layer of material (wood chips, straw, leaves, etc.) placed around plants to hold moisture, prevent weed growth, and enrich or sterilize the soil.

Multiple Use - Use of land for more than one purpose; i.e., grazing of livestock, watershed and wildlife protection, recreation, and timber production. Also applies to use of bodies of water for recreational purposes, fishing, and water supply.

Mutagen - An agent that causes a permanent genetic change or transformation in a cell other than that which occurs during normal genetic recombination.

Mutagenicity - The capacity of a chemical or physical agent to cause permanent alternation.

N

Navy Assessment and Control Of Installation Pollutants (NACIP) - The Navy's original environmental restoration program, replaced by the Installation Restoration Program in 1986.

National Estuary Program - A program established under the Clean Water Act Amendments of 1987 to develop and implement conservation and management plans for protecting estuaries and restoring and maintaining their chemical, physical, and biological integrity, as well as controlling point and nonpoint pollution sources.

National Oil and Hazardous Substances Contingency Plan (NOHSCP/NCP) - 40 Code of Federal Regulations 300 establishes EPA's response policy and lays out the key response steps for implementing CERCLA. The regulation guides determination of the sites to be corrected under both the Superfund program and the program to prevent or control spills into surface waters or elsewhere.

National Pollutant Discharge Elimination System (NPDES) - A provision of the Clean Water Act which prohibits discharge of pollutants into waters of the United States unless a special permit is issued by EPA, a state, or, where delegated, a tribal government on an Indian reservation.

National Priorities List (NPL) - The list, compiled by EPA pursuant to CERCLA section 105, of uncontrolled or abandoned hazardous substance releases in the U.S. that are priorities for long-term remedial evaluation and response. The NPL is a compilation of sites scoring 28.5 or higher on the EPA HRS or HRS2. EPA is required to update the NPL at least once a year. A site must be on the NPL to receive money from the Trust Fund for remedial action.

National Response Center (NRC) - The federal operations center that receives notifications of all releases of oil and hazardous substances into the environment; open 24 hours a day, it is operated by the US Coast Guard, which evaluates all reports and notifies the appropriate agency.

National Response Team (NRT) - Representatives of 13 federal agencies that, as a team, coordinate federal responses to nationally significant incidents of pollution - an oil spill, a major chemical release, or a Superfund response action - and provide advice and technical assistance to the responding agency(ies) before and during a response action.

Natural Attenuation - Refers to naturally-occurring processes in soil and groundwater environments that act without human intervention to reduce the mass, toxicity, mobility, volume, or concentration of contaminants in those media. These in-situ processes include biodegradation, dispersion, dilution, adsorption, volatilization, and chemical or biological stabilization or destruction of contaminants.(USEPA OSWER, 1996)

Natural Resource - As defined by CERCLA, land, fish, wildlife, biota, air, water, groundwater, drinking water supplies, and other such resources belonging to, managed by, held in trust by, appertaining to, or otherwise controlled by the U.S., including the resources of the fishery conservation/zone established by the Magnuson Fishery Conservation and Management Act of 1976, any State or local government, any foreign government, any Indian Tribe, or, if such resources are subject to a trust restriction on alienation, any member of an Indian Tribe.

Natural Resource Damage Assessment (NRDA) - A damage assessment conducted by one or more trustees if response action will not sufficiently restore or protect natural resources damaged by release. The purpose is to determine the appropriate level of compensation from a responsible party to trustee resources.

Natural Resource Trustees (NRTs) - Federal trustees with statutory responsibilities with regard to protection or management of natural resources or

stewardship responsibilities as a manager of Federally owned land; trustees may also be state agencies or Indian tribes.

Navigable Waters - 1) As defined by 40 CFR 110.1, the waters of the U.S., including the territorial seas. The term includes: A) All waters that are currently used, were used in the past, or may be susceptible to use in interstate or foreign commerce, including all waters that are subject to the ebb and flow of the tide; B) Interstate waters, including interstate wetlands; C) All other waters such as intrastate lakes, rivers, streams (including intermittent streams), mudflats, sandflats, and wetlands, the use, degradation, or destruction of which would affect or could affect interstate or foreign commerce including any such waters: a) That are or could be used by interstate or foreign travelers for recreational or other purposes; b) From which fish or shellfish are or could be taken and sold in interstate or foreign commerce; c) That are used or could be used for industrial purposes by industries in interstate commerce; D) All impoundments of waters otherwise defined as navigable waters under this section; E) Tributaries of waters identified in A) through D) of this definition, including adjacent wetlands; and F) Wetlands adjacent to waters identified in A) through E) of this definition provided that waste treatment systems (other than cooling ponds meeting the criteria of this paragraph) are not waters of the U.S. 2) Traditionally, waters sufficiently deep and wide for navigation by all, or specified vessels; such waters in the United States come under federal jurisdiction and are protected by certain provisions of the Clean Water Act.

Necrosis - Death of plant or animal cells or tissues. In plants, necrosis can discolor stems or leaves or kill a plant entirely.

Nephelometric - A means of measuring turbidity in a sample by passing light through a sample and measuring the amount of light deflected.

Neritic - The coastal sea from the low tide line to a depth of 100 fathoms, generally waters of the continental shelf.

Neutralization - 1) Decreasing the acidity or alkalinity of a substance by adding alkaline or acidic materials, respectively. 2) The process of neutralizing a hazardous material spill by applying another material to the spill which will react chemically with it to form a less harmful substance. 3) Treatment of corrosive hazardous wastes to yield a pH near 7.

Neutralizing Agents - Those materials which can be used to neutralize the effects of a corrosive material.

Nickel (Ni) - A hard, malleable, ductile metal. It occurs naturally in all parts of the environment including plants and animals. It is used in alloys, electrical catalysts for hydrogenation of oils, coins, and magnetic and electrical contacts. Nickel can be soluble or insoluble in water depending on the chemical and physical properties of the water body. In soil, it is extremely persistent. It can cause dermatitis, and ingestion can cause nausea and vomiting. Nickel is a Group A, human carcinogen.

Nitrate (NO_3) - 1) A salt or ester of nitrous acid. Concentrations greater than 45 ppm can be toxic. 2) Intermediate breakdown product of biological wastes. Common component of nutrient loading in aquatic environments. 3) Vital nutrient for plant growth. 4) Inorganic fertilizer that enters water supply sources from septic systems, animal feed lots, agricultural fertilizers, manure, industrial waste waters, sanitary landfills and garbage dumps.

Nitric Oxide (NO) - A gas formed by combustion under high temperature and high pressure in an internal combustion engine; changes into nitrogen dioxide in the ambient air and contributes to photochemical smog.

Nitrification - The process whereby ammonia in wastewater is oxidized to nitrite and then to nitrate by bacterial or chemical reactions.

Nitrite (NO_2, aqueous) - 1) An intermediate in the process of nitrification. 2) Nitrous oxide salts used in food preservation.

Nitrogen (N) - Can exist as a gas or dissolved in solution, nitrogen forms various environmentally significant compounds with oxygen.

Nitrogen Dioxide (NO_2, gaseous) - The result of nitric oxide combining with oxygen in the atmosphere; major component of photochemical smog.

Nitrogen Oxide (NOx) - Product of combustion from transportation and stationary sources and a major contributor to the formation of ozone in the troposphere and to acid deposition.

No Further Action (NFA) - Applies to any site where the possibility of contamination no longer exists and, therefore, will require no additional remedial action.

No Further Response Action Planned (NFRAP) - CERCLA sites that do not warrant moving further in the site evaluation process; a site that does not pose significant threat to public health or the environment; decision must be documented and may be reversible if future information reveals additional remedial action is warranted. The Navy forwards the decision document to the regulators for concurrence.

No Observable Adverse Effect Level (NOAEL) - 1) In dose-response experiments, an exposure level at which there are no statistically or biologically significant increases in the frequency or severity of adverse effects between the exposed population and

its appropriate control; some effects may be produced at this level, but they are not considered to be adverse, nor precursors to specific adverse effects. In an experiment with more than one NOAEL, the regulatory focus is primarily on the highest one, leading to the common usage of the term NOAEL to mean the highest exposure level without adverse effects. 2) From long-term toxicological studies of agriculture chemical active ingredients, levels which indicate a safe, lifetime exposure level for a given chemical. Used to establish tolerance for human diets.

No Observed Effect Level (NOEL) - In dose-response experiments, an exposure level at which there are no statistically or biologically significant increases in the frequency or severity of any effect between the exposed population and its appropriate control.

No Till - Planting crops without prior seedbed preparation, into an existing cover crop, sod, or crop residues, and eliminating subsequent tillage operations.

Noble Metal - Chemically inactive metal such as gold; does not corrode easily.

Non-Carcinogen - A chemical classification for the purposes of risk assessment based on either inadequate toxicological data or no evidence of carcinogenicity according to USEPA 1986 Guidelines for Risk Assessment, in which non-carcinogens are summarized as follows: *Group D*: Not classifiable as to human carcinogenicity: Inadequate human and animal evidence for carcinogenicity or no available data. *Group E*: Evidence of non-carcinogenicity in humans: No evidence for carcinogenicity in at least two adequate animal tests or in both adequate human epidemiological and animal studies.

Non-Conventional Pollutant - Any pollutant not statutorily listed or which is poorly understood by the scientific community.

Non-Degradation - An environmental policy which disallows any lowering of naturally occurring quality regardless of preestablished health standards.

Non-Flowing Artesian Well - An artesian well in which the head is not sufficient to raise water to the land surface at the well site.

Non-Point Source - Diffuse pollution sources (i.e., without a single point of origin or not introduced into a receiving stream from a specific outlet). The pollutants are generally carried off the land by storm water. Common nonpoint sources are agriculture, forestry, urban, mining, construction, dams, channels, land disposal, saltwater intrusion, and city streets.

Nonpolar - Describing a substance or molecule in which the positive and negative electrical charges coincide, as opposed to polar molecules in which the charges are permanently separated. Nonpolar substances are generally insoluble and immiscible in water, because water is polar. Most hydrocarbon liquids are nonpolar.

Non-Potable - Water that is unsafe or unpalatable to drink because it contains objectionable pollution, contamination, minerals, or infective agents.

Notice of Deficiency - An EPA request to a facility owner or operator requesting additional information before a preliminary decision on a permit application can be made.

Notice of Intent to Deny - Notification by EPA of its preliminary intent to deny a permit application.

Nucleophile - A chemical reagent that reacts by forming covalent bonds with electronegative atoms and compounds.

Nutrient - Any substance assimilated by living things that promotes growth. The term is generally applied to nitrogen and phosphorus in wastewater, but is also applied to other essential and trace elements.

Nutrient Amendment - Chemical or organic fertilizer, usually rich in nitrogen, phosphorus, or potassium, that is added to support the life and growth of microorganisms in a biopile or other application.

Nutrient Pollution - Contamination of water resources by excessive inputs of nutrients. In surface waters, excess algal production is a major concern.

O

Obligate Aerobe - Microorganisms that can use only oxygen as an electron acceptor. Thus, the presence of molecular oxygen is a requirement for these microbes.

Obligate Anaerobe - Microorganisms that grow only in the absence of oxygen; the presence of molecular oxygen either inhibits growth or kills the organism. For example, methanogens are very sensitive to oxygen and can live only under strictly anaerobic conditions. Sulfate reducers, on the other hand, can tolerate exposure to oxygen, but cannot grow in its presence.

Occupational Exposure - Reasonably anticipated skin, eye, mucous membrane, or parental contact with blood or other potentially infectious materials that results from the performance of an employee's duties.

Octanol-Water Diffusion Coefficient (K_{ow}) - Provides a measure of the extent of chemical partitioning between octanol and water at equilibrium. The greater the K_{ow}, the more likely a chemical is to partition to octanol than to remain in water. Octanol is used as a surrogate for lipids (fat),

therefore K_{ow} can be used to predict bioconcentration in aquatic organisms.

Off-Base Contamination - Contaminants found to be migrating off the installation or coming onto the installation from off-base sources.

Off-Gas - Gaseous effluent, possibly containing contaminant vapors, that leaves a process, typically from a point source during process operations.

Off-Site Facility - A hazardous waste treatment, storage or disposal area that is located away from the generating site.

Offstream Uses - Water withdrawn from surface or groundwater sources for use at another place.

Oil Fingerprinting - A method that identifies sources of oil and allows spills to be traced to their source.

Oil Spill - An accidental or intentional discharge of oil which reaches bodies of water. Can be controlled by chemical dispersion, combustion, mechanical containment, and/or adsorption. Spills from tanks and pipelines can also occur away from water bodies, contaminating the soil, getting into sewer systems and threatening underground water sources.

Oil/Water Separator (OWS) - Engineered units that skim oil from water.

Oncogenic - A substance that causes tumors, whether benign or malignant.

On-Scene Coordinator (OSC) - The predesignated EPA, Coast Guard, or Department of Defense official who coordinates and directs Superfund removal actions or Clean Water Act oil or hazardous spill response actions.

On-Site - According to the NCP, the aerial extent of contamination and all suitable areas in very close proximity to the contamination necessary for implementation of the response action.

On-Site Facility - A hazardous waste treatment, storage or disposal area that is located on the generating site.

One-Hit Model - Mathematical model based on the biological theory that a single "hit" of some minimum critical amount of a carcinogen at a cellular target such as DNA can initiate an irreversible series of events, eventually leading to a tumor.

Open Burning - Uncontrolled fires in an open dump.

Open Dump - An uncovered site used for disposal of waste without environmental controls. See Dump.

Operable Unit (OU) - A discrete action that comprises an incremental step toward comprehensively addressing site problems; an action that manages, eliminates, or mitigates a release, threat of a release, or pathway of exposure. A typical operable unit would be removal of drums and tanks from the surface of a site. Can also include action at a collection of sites to be treated together, often because of similar cleanup requirements.

Operation And Maintenance (O&M) - 1) Activities conducted after a Superfund site action is constructed to ensure that the action is effective. 2) Actions taken after construction to assure that facilities constructed to treat wastewater will be properly operated and maintained to achieve normative efficiency levels and prescribed effluent limitations in an optimum manner. 3) On-going asbestos management plan in a school or other public building, including regular inspections, various methods of maintaining asbestos in place, and removal when necessary.

Opportunistic Species - 1) Organisms able to exploit temporary habitats or conditions. 2) A species that has a life history characterized by short life span, short development time to maturity, high death rate, and many reproductive cycles per year.

Organic - 1) Referring to or derived from living organisms. 2) Pertaining or relating to a compound containing carbon, especially as an essential component; organic compounds usually have hydrogen bonded to the carbon atom.

Organic Carbon Diffusion Coefficient (K_{oc}) - Provides a measure of the extent of chemical partitioning between organic carbon and water at equilibrium. The higher the K_{oc}, the more likely a chemical is to bind to soil or sediment than to remain in water.

Organic Chemicals/Compounds - Animal or plant-produced substances containing mainly carbon, hydrogen, nitrogen, and oxygen.

Organic Matter - Carbonaceous waste contained in plant or animal matter and originating from domestic or industrial sources.

Organism - Any form of animal or plant life.

Osmosis - The passage of a liquid from a weak solution to a more concentrated solution across a semipermeable membrane that allows passage of the solvent (water) but not the dissolved solids.

Outfall - The place where effluent is discharged into receiving waters.

Overburden - Rock and soil cleared away before construction or mining.

Overdraft - The pumping of water from a groundwater basin or aquifer in excess of the supply flowing into the basin; results in a depletion or "mining" of the groundwater in the basin. See Mining of an Aquifer.

Oxidant/Oxidizer - A substance containing oxygen that reacts chemically in air to produce a new substance; the primary ingredient of photochemical smog.

Oxidation - 1) Loss of electrons from a compound, such as an organic contaminant. The oxidation can supply energy that microorganisms use for growth. Often (but not always), oxidation results in the addition of an oxygen atom and/or the loss of a hydrogen atom. 2) The addition of oxygen that breaks down organic

waste or chemicals such as cyanides, phenols, and organic sulfur compounds in sewage by bacterial and chemical means.

Oxidation-Reduction Potential (ORP) - The electric potential required to transfer electrons from one compound or element (the oxidant) to another compound or element (the reductant); used as a qualitative measure of the state of oxidation in water treatment systems.

Oxygen (O, O_2) - Can exist as a gas or dissolved in solution. Oxygen forms various inorganic compounds with metals as well as organic compounds with carbon, hydrogen, nitrogen and other elements. O_2 (gas) is vital to life whereas O_3, ozone, can be harmful due to its ability to oxidize biological tissue, metals, organic compounds and other materials. See Ozone.

Oxygen Use Rate - Rate of oxygen consumption due to biological and chemical action (used to determine respiration rate when the chemical oxygen demand is negligible).

Oxygenated Solvent - An organic solvent containing oxygen as part of the molecular structure. Alcohols and ketones are oxygenated compounds often used as paint solvents.

Ozonation - Application of ozone to water for disinfection or for taste and odor control.

Ozonator - A mechanical device that creates ozone.

Ozone (O_3) - Found in two layers of the atmosphere, the stratosphere and the troposphere. In the stratosphere (the atmospheric layer 7 to 10 miles or more above the earth's surface) ozone is a natural form of oxygen that provides a protective layer shielding the earth from ultraviolet radiation. In the troposphere (the layer extending up 7 to 10 miles from the earth's surface), ozone is a chemical oxidant and major component of photochemical smog. It can seriously impair the respiratory system and is one of the most widespread of all the criteria pollutants for which the Clean Air Act required EPA to set standards. Ozone in the troposphere is produced through complex chemical reactions of nitrogen oxides, which are among the primary pollutants emitted by combustion sources; hydrocarbons, released into the atmosphere through the combustion, handling and processing of petroleum products; and sunlight.

Ozone Depletion - Destruction of the stratospheric ozone layer which shields the earth from ultraviolet radiation harmful to life. This destruction of ozone is caused by the breakdown of certain chlorine and/or bromine containing compounds (chlorofluorocarbons or halons) when they reach the stratosphere and then catalytically destroy ozone molecules.

Ozone Hole - A thinning break in the stratospheric ozone layer. The designation of "ozone hole" is made when the detected amount of depletion exceeds fifty percent. Seasonal ozone holes have been observed over both the Antarctic region and the Arctic region and part of Canada and the extreme northeastern United States.

Ozone Layer - The protective layer in the stratosphere, beginning about 7 to 10 miles above the ground, that absorbs some of the sun's ultraviolet rays, thereby reducing the amount of potentially harmful radiation reaching the earth's surface.

P

Packaging - The assembly of one or more containers and any other components necessary to assure minimum compliance with a program's storage and shipment packaging requirements. Also, the containers, etc., involved.

Packed Tower - A pollution control device that forces dirty air through a tower packed with crushed rock or wood chips while liquid is sprayed over the packing material. The pollutants in the air stream either dissolve or chemically react with the liquid.

Palatable Water - Water at a desirable temperature that is free from objectionable tastes, odors, colors, and turbidity.

Parameter - A variable, measurable property whose value is a determinant of the characteristics of a system; e.g., temperature, pressure, and density are parameters of the atmosphere.

Partially Penetrating Well - A well in which the screened length is less than the saturated thickness of the aquifer.

Particulates - 1) Fine liquid or solid particles such as dust, smoke, mist, fumes, or smog found in air or emissions. 2) Very small solids suspended in water. They vary in size, shape, density, and electrical charge, and can be gathered together by coagulation and flocculation.

Partition Coefficient - Measure of the sorption phenomenon, whereby a chemical is divided between the soil and water phase; also referred to as adsorption partition coefficient.

Pathogenic - Capable of causing disease.

Pathogens - Microorganisms that can cause disease in other organisms or in humans, animals and plants (e.g., bacteria, viruses, or parasites) found in sewage, in runoff from farms or rural areas populated with domestic and wild animals, and in water used for swimming. Fish and shellfish contaminated by

pathogens, or the contaminated water itself, can cause serious illness.

Pentachlorophenol (PCP) - Dark-colored flakes and needle-like crystals which have a pungent odor when hot. It is used in wood preservatives, wood products, starches, dextrins, glue and algae control in herbicide formulation. PCP causes a variety of systemic problems that can lead to death. It is a Group B2, probable human carcinogen.

Percent Saturation - The amount of a substance that is dissolved in a solution compared to the amount that could be dissolved in it.

Percent Solids - The proportion of solid in a soil sample determined by drying an aliquot of the sample.

Perched Aquifer - 1) Unconfined groundwater separated from an underlying main body of groundwater by a localized unsaturated zone. 2) Zone of unpressurized water held above the water table by a small lens of impermeable rock or sediment.

Perchloroethylene (PCE) - A volatile, clear, colorless liquid with an ethereal odor. Its former uses included dry cleaning, degreasing metals, and as a solvent. Contact can cause dermatitis and irritation, ingestion can cause gastrointestinal irritation. Exposures can result in acute or fatal toxicity. Synonyms - Tetrachloroethene, and Tetrachloroethylene.

Percolating Water - Water that passes through rocks or soil under the force of gravity.

Percolation - 1) Movement under hydrostatic pressure of water, through the interstices of rocks or soils, downward to groundwater, except movement through large openings such as solution channels. 2) Slow seepage of water through a filter.

Performance Evaluation (PE) Sample - Contains unknown quantities of analytes sent to a laboratory for analysis as part of the lab evaluation.

Performance Standards - 1) Regulatory requirements limiting the concentrations of designated organic compounds, particulate matter, and hydrogen chloride in emissions from incinerators. 2) Operating standards established by EPA for various permitted pollution control systems, asbestos inspections, and various program operations and maintenance requirements.

Permeability - 1) The property or capacity of a porous rock, sediment or soil to transmit a fluid per unit cross section without damage to the structure of the media. 2) A measure of the ease of fluid flow under unequal pressure. 3) A measure of how interconnected the pores of a material are.

Permissible Dose - The dose of a chemical that may be received by an individual without the expectation of a significantly harmful result.

Permissible Exposure Limit (PEL) - The maximum permissible concentration of a toxic chemical or exposure level of a harmful physical agent (normally averaged over an 8-hour period) to which a person may be exposed.

Permit - An authorization, license, or equivalent control document issued by EPA or an approved state agency to implement the requirements of an environmental regulation; e.g., a permit to operate a wastewater treatment plant or to operate a facility that may generate harmful emissions.

Persistence - Refers to the length of time a compound stays in the environment, once introduced. A compound may persist for less than a second or indefinitely.

Personal Protective Equipment (PPE) - Any material or device worn to protect a worker from exposure to or contact with any harmful substance or force. For IR Program work, it includes protective clothing, respiratory devices, and protective shields and barriers.

Pesticide - Substances or mixtures intended for preventing, destroying, repelling, or mitigating any pest. Also, any substance or mixture intended for use as a plant regulator, defoliant, or desiccant.

Petroleum - Including crude oil or any fraction thereof that is liquid at standard conditions of temperature and pressure (60°F and 14.7 lb/in^2 absolute; 15.5C° and 10335.6 kg/m^2). The term includes petroleum-based substances comprised of a complex blend of hydrocarbons derived from crude oil through processes of separation, conversion, upgrading, and finishing, such as motor fuels, jet oils, lubricants, petroleum solvents, and used oils.

Petroleum Derivatives - Chemicals formed when petroleum products break down in contact with groundwater.

Petroleum, Oil and Lubricants (POL) - For example jet fuel, gasoline, diesel fuel and POL sludges.

pH - The negative value of the power to which 10 is raised in order to obtain the concentration of hydrogen ions (H_3O^+) in gram-equivalents per liter. pH is a measure of the acidity or basicity of a material: measured 0 through 14 with 7 being neutral, 0 being highly acidic and 14 being highly basic. Natural waters usually have a pH between 6.5 and 8.5.

Phenolphthalein Alkalinity - The alkalinity in a water sample measured by the amount of standard acid needed to lower the pH to a level of 8.3 as indicated by the change of color of the phenolphthalein from pink to clear.

Phenols - Organic compounds that are byproducts of petroleum refining, tanning, and textile, dye, and resin manufacturing. Low concentrations cause taste and odor problems in water; higher concentrations can kill aquatic life and humans.

Phosphates - Certain chemical compounds containing phosphorus.

Phosphorus (P) - An essential chemical food element that can contribute to nutrient loading of lakes and other water bodies. Increased phosphorus levels result from discharge of phosphorus-containing materials into surface waters, like fertilizers.

Photosynthesis - The manufacture by plants of carbohydrates and oxygen from carbon dioxide mediated by chlorophyll in the presence of sunlight.

Physical and Chemical Treatment - Processes generally used in large-scale wastewater treatment facilities. Physical processes may include air-stripping or filtration. Chemical treatment includes coagulation, chlorination, or ozonation. The term can also refer to treatment of toxic materials in surface and groundwaters, oil spills, and some methods of dealing with hazardous materials on or in the ground.

Phytoplankton - That portion of the plankton community comprised of tiny plants, e.g., algae, diatoms.

Phytoremediation - A remediation technology using plants to degrade contaminants in soil, sediment and groundwater.

Phytotoxic - Harmful to plants.

Picoplankton - Plankton in the size range of 0.2 to 2.0 µm.

Piezometer - A well with a screen length that is only 1-5% of an aquifer's saturated thickness. Generally used to measure the total potential or head at a point in an aquifer.

Piezometric Surface - An imaginary surface that everywhere coincides with the static water level in a confined aquifer.

Pilot Tests - Testing a cleanup technology under actual site conditions to identify potential problems prior to full-scale implementation.

Pipe Schedule - Standard method for designating the wall thickness of pipe.

Plankton - Tiny plants and animals that live in water.

Plasma-Arc Reactor - An incinerator that operates at extremely high temperatures and treats highly toxic wastes that do not burn easily.

Plastics - Non-metallic chemoreactive compounds molded into rigid or pliable construction materials, fabrics, etc.

Plugging - Act or process of stopping the flow of water, oil, or gas into or out of a formation through a borehole or well penetrating that formation.

Plume - 1) A visible or measurable discharge of a contaminant from a given point of origin. Can be visible or thermal in water as it extends downstream from the pollution source, or visible in air as, for example, a plume of smoke. 2) The area of radiation leaking from a damaged reactor. 3) Area downwind within which a release could be dangerous for those exposed to leaking fumes.

Plutonium (Pu) - A radioactive metallic element chemically similar to uranium.

pOH - The negative value of the power to which 10 is raised in order to obtain the concentration of hydroxide ions (OH^-) in gram-equivalents per liter. Effectively, pOH is the opposite of pH: 7 is neutral, 0 is highly basic and 14 is highly acidic.

Point(s) of Compliance - A location(s) selected between the source area(s) and the potential point(s) of exposure where concentrations of chemicals of concern must be at or below the determined target levels in media (for example, groundwater, soil, or air).

Point(s) of Exposure - The point(s) at which an individual or population may come in contact with a chemical(s) of concern originating from a site.

Point Source - 1) A stationary location or fixed facility from which pollutants are discharged. 2) Any single identifiable source of pollution, e.g., a pipe, ditch, ship, ore pit, factory smokestack, etc.

Polar - Describing a substance or molecule in which the positive and negative electrical charges are permanently separated, as opposed to nonpolar molecules in which the charges coincide. Polar molecules ionize in solution and impart electrical conductivity. Water, alcohol, and sulfuric acid are polar. Most hydrocarbon liquids are nonpolar. Carboxyl and hydroxyl groups often exhibit an electric charge. The formation of emulsions and the action of detergents are dependent on this behavior.

Pollen - 1) The fertilizing element of flowering plants. 2) Background air pollutant.

Pollutant - 1) As defined by section 101(33) of CERCLA, shall include but not be limited to, any element, substance, compound or mixture, including disease-causing agents, which after release into the environment and upon exposure, ingestion, inhalation, or assimilation into any organism, either directly from the environment or indirectly by ingestion through food chains, will or may reasonably be anticipated to cause death, disease, behavioral abnormalities, cancer, genetic mutation, physiological malfunctions (including malfunctions

in reproduction) or physical deformations, in such organisms or their offspring. Shall not include petroleum, including crude oil or any fraction thereof which is not otherwise specifically listed or designated as a hazardous substance and shall not include natural gas, liquified natural gas or synthetic gas of pipeline quality (or mixtures of natural gas and such synthetic gas). 2) For purposes of the NCP, the term pollutant or contaminant means any pollutant or contaminant that may present an imminent and substantial danger to public health or welfare. 3) Generally, any substance introduced into the environment that adversely affects the usefulness of a resource.

Pollution - Generally, the presence of matter or energy whose nature, location, or quantity produces undesired environmental effects. Under the Clean Water Act, for example, the term is defined as the manmade or man-induced alteration of the physical, biological, chemical, and radiological integrity of water.

Pollution Prevention (P2) - The active process of identifying areas, processes, and activities which create excessive waste byproducts for the purpose of substitution, alteration, or elimination of the process to prevent waste generation.

Polonium (Po) - A radioactive element that occurs in pitchblende and other uranium containing ores.

Polychaete - A marine worm with paired, flattened, bristle-tipped organs of locomotion.

Polychlorinated Biphenyl (PCB) - Chemical mixtures comprised of many isomers and compounds which vary from mobile, oily liquids to white, crystalline solids and hard, noncrystalline resins. PCBs have excellent fire retardant capabilities and chemical stability resulting in wide-spread use in electrical equipment. PCBs were used in the dielectric fluid of electrical transformers and capacitors for insulating purposes and in gas pipeline systems as lubricant. PCBs, however, are persistent and especially toxic when involved in fire-related incidents. Further sale for new use was banned by law in 1979. PCBs cause lesions of the skin and liver. Extensive damage to the liver from exposure can lead to death. The higher the chlorine content of the compound, the more toxic the effects. PCBs are Group B2, animal carcinogens. Common types of PCBs are Aroclor 1248, 1254, and 1260.

Polycyclic Aromatic Hydrocarbon (PAH) - Hydrocarbons with multiple benzene rings. PAHs are typical components of asphalt, fuel, oils, and greases. Examples of PAHs include naphthalene, the benzo pyrenes, fluoranthene, and chrysene. Synonym - Polynuclear Aromatic Hydrocarbon.

Polymer - Basic molecular ingredients in plastic.

Polynuclear Aromatic Hydrocarbon (PNA) - Hydrocarbons with multiple benzene rings. PNAs are typical components of asphalt, fuel, oils, and greases. Examples of PNAs include naphthalene, the benzo pyrenes, fluoranthene, and chrysene. Synonym - Polycyclic Aromatic Hydrocarbons.

Polyvinyl Chloride (PVC) - A tough, environmentally indestructible plastic that releases hydrochloric acid when burned.

Population - 1) A group of interbreeding organisms occupying a particular space. 2) The number of humans or other living creatures in a designated area.

Population at Risk - A population subgroup that is more likely to be exposed to a chemical, or is more sensitive to the chemical, than is the general population.

Pore Space - The void space and minute passages in a solid material.

Porosity - 1) Degree to which soil, gravel, sediment or rock is permeated with pores or cavities through which water or air can move. 2) The ratio of the volume of the openings in a rock to the total volume of the rock.

Post-Closure - The time period following the shutdown of a waste management or manufacturing facility; for monitoring purposes, often considered to be 30 years.

Potable Water - Water that is safe for drinking and cooking.

Potassium (K) - An alkali metal that forms various salts with halogens and other metals. It is an essential nutrient, and among other uses, it is used in electrical impulses in the nervous system. It is abundant naturally, and is generally not considered toxic.

Potential Receptor - Any living organism or environmental medium which is in the pathway of contamination from a discharge.

Potentially Responsible Party (PRP) - Any individual or company, including owners, operators, transporters or generators, potentially responsible for, or contributing to a spill or other contamination at a Superfund site. Whenever possible, through administrative and legal actions, GPA requires PRPs to clean up hazardous sites they have contaminated.

Potentially Responsible Party (PRP) Site - Sites where the DOD has no current or past ownership interest and where DOD has a responsibility for cleanup of the site under CERCLA.

Potentiation - The effect of one chemical to increase the effect of another chemical.

Potentiometric Surface - 1) An imaginary surface that everywhere coincides with the static water level in a confined aquifer. 2) The level to which water will rise

in cased wells or other cased excavations into confined aquifers.

Practical Quantitation Limits (PQL) - The minimum concentration of an analyte required to be measured and allowed to be reported without qualification as an estimated quantity for samples without substantial interferences (for technical representation see SW-846).

Precipitate - A solid that separates from a solution.

Precipitation - 1) The formation of solids out of constituents that were once dissolved. Precipitation is caused by a change in conditions, such as temperature, chemical concentration, or the presence of seed particles to begin the process. 2) Water droplets or ice particles, as rain or snow, condensed from atmospheric water vapor and massive enough to fall to the earth's surface. 3) Removal of hazardous solids from liquid waste to permit safe disposal. 4) Removal of particles from airborne emissions.

Precision - A measure of mutual agreement among individual measurements of the same property, usually under prescribed similar conditions. Precision is usually expressed in terms of standard deviation.

Preliminary Assessment (PA) - Identifies potential areas of contamination for further investigation. Consists of a review of available historical information (also known as a records search), aerial photographs, employee interviews, and site visits to gain information concerning installation activities and land use.

Preliminary Natural Resource Survey (PNRS) - A simple screening study of a site by a trustee to determine whether trustee resources may have been affected and whether further attention is warranted.

Preliminary Remediation Goals (PRGs) - Concentration levels set for individual chemicals that, for carcinogens corresponds to a specific cancer risk level of 1 in 1 million and for noncarcinogens corresponds to a Hazard Quotient of 1. PRGs are generally selected when ARARs are not available.

Pretreatment - Processes used to reduce, eliminate, or alter the nature of wastewater pollutants from non-domestic sources before they are discharged into publicly owned treatment works (POTWs).

Prevention - Measures taken to minimize the release of wastes to the environment.

Primary Drinking Water Regulation - Applies to public water systems and specifies a contaminant level, which, in the judgment of the EPA Administrator, will not adversely affect human health.

Primary Substrate - Substrate which provides the majority of the growth and energy requirements for cells.

Priority Pollutant - A group of approximately 130 chemicals (about 110 are organics) that appear on a USEPA list because they are toxic and relatively common in industrial discharges.

Probability of Detection - The likelihood, expressed as a percentage, that a test method will correctly identify a leaking tank.

Production Well - A well of sufficient production so it can be used for public use, either as a water supply, or for industrial purposes.

Proposed Plan - A plan for a site cleanup that is available to the public for comment.

Proteins - Complex nitrogenous organic compounds of high molecular weight made of amino acids; essential for growth and repair of animal tissue. Many, but not all, proteins are enzymes.

Protocol - A series of formal steps for conducting a test.

Protozoa - One-celled animals that are larger and more complex than bacteria. May cause disease.

Public - As defined by the NCP includes citizens directly affected by a site, other interested citizens or parties, organized groups, elected officials, and potentially responsible parties.

Public Hearing - A formal meeting wherein officials hear the public's views and concerns about an action or proposal. The Navy is required to consider such comments when evaluating its actions. Public hearings must be held upon request during the public comment period.

Public Notice - 1) Notification by EPA informing the public of Agency actions such as the issuance of a draft permit or scheduling of a hearing. EPA is required to ensure proper public notice, including publication in newspapers and broadcast over radio stations. 2) In the safe drinking water program, water suppliers are required to publish and broadcast notices when pollution problems are discovered.

Public Water Supply - In Virginia, as defined by the Virginia Department of Health, a water system serving at least 25 individuals or more than 15 residential connections.

Publicly Owned Treatment Works (POTW) - A waste-treatment works owned by a state, unit of local government, or Indian tribe, usually designed to treat domestic wastewaters.

Pump and Treat Technology - Treatment method in which contaminated water is pumped out of the ground and then treated before being discharged.

Pumping Level - Depth to water in a well when the well is being pumped.

Pumping Test - Pumping of a well at a constant rate in order to obtain information about the performance of the well or to provide data from which the principal factors of aquifer performance can be calculated. A test for the latter purpose is also called an aquifer test.

Pyrolysis - Decomposition of a chemical by extreme heat.

Q

Qualified Individual (QI) - A term used by the U. S. Coast Guard for the designated individual who is trained in oil and hazardous substance facility response and acts as liaison with the Federal OSC in spill response activities.

Qualitative - Analysis without regard to quantity or specific numeric values.

Qualitative Risk Analysis - A nonnumeric evaluation of a site to determine potential exposure pathways and receptors based on known or readily available information.

Quality Assurance (QA) - The total integrated program put in place to assure the reliability of data generated in the laboratory.

Quality Assurance Project Plan (QAPP) - A written document associated with all remedial site sampling activities, which presents in specific terms the organization (where applicable), objectives, functional activities, and specific Quality Assurance (QA) and Quality Control (QC) activities designed to achieve the Data Quality Objectives (DQO) of a specific project(s) or continuing operation(s). The QAPP is prepared for each specific project or continuing operation (or group of similar projects or continuing operations). The QAPP will be prepared by the responsible program office, regional office, laboratory, contractor, recipient of an assistance agreement, or other organization. For an enforcement action, potentially responsible parties may prepare a QAPP subject to lead agency approval. There are 16 essential elements which EPA has mandated to be addressed in a project plan.

Quality Assurance/Quality Control (QA/QC) - A system of procedures, checks, audits, and corrective actions to ensure that all research design and performance, environmental monitoring and sampling, and other technical and reporting activities are of the highest achievable quality.

Quality Control (QC) - The routine application of specific, well-defined procedures which ensure the generation of data which fulfill the objectives of the QA program.

Quantitative - Analysis with regard to quantities or specific numeric values.

R

Radius of Influence - The maximum distance from the extraction or injection well where vacuum or pressure (soil gas or groundwater movement) occurs.

Radius of Oxygen Influence - The radius to which oxygen has to be supplied to sustain maximal biodegradation; a function of both air flowrates and oxygen utilization rates, and therefore depends on site geology, well design, and microbial activity.

Radius of Vulnerability Zone - The maximum distance from the point of release of a hazardous substance in which the airborne concentration could reach the level of concern under specified weather conditions.

Radon (Rn) - A colorless, naturally occurring, radioactive, inert gas formed by radioactive decay of radium atoms in soil or rocks.

Raoult's Law - A physical-chemical law which states that the vapor pressure of a solution is equal to the mole fraction of the solvent multiplied by the vapor pressure of the pure solvent.

Raw Sewage - Untreated wastewater and its contents.

Raw Water - Intake water prior to any treatment or use.

RCRA Facility Assessment (RFA) - The initial process to determine whether corrective action at a site is warranted or to define what additional data must be gathered to make this determination. Equivalent to a CERCLA Preliminary Assessment (PA). RFAs are performed as part of the RCRA permitting process.

RCRA Facility Investigation (RFI) - The process of determining the extent of hazardous waste contamination. Equivalent to the CERCLA Remedial Investigation (RI).

RCRA Part A Permit - Identifies treatment, storage and disposal units within a to-be-permitted facility.

RCRA Part B Permit - Describes the wastes managed, the quantities, and the facilities. Allows the management of a treatment, storage, and disposal facility.

Reactivity - The ability of a material to undergo a chemical reaction with the release of energy. It could be initiated by mixing or reacting with other materials, application of heat, physical shock, etc.

Reagent Blank - Usually an organic aqueous solution that is as free of analyte as possible and contains all the reagents in the same volume as used in the processing of samples. The reagent blank must be carried through the complete sample preparation procedure and contains the same reagent concentrations in the final solution as in the sample solution used for analysis. The reagent blank is used

to correct for possible contamination resulting from the preparation or processing of the sample. One reagent blank should be prepared for every analytical batch or for every 20 samples, whichever is more frequent.

Reasonable Maximum Exposure (RME) - The maximum exposure reasonably expected to occur at a site. The RME is estimated for both the current and future land-use conditions. For Superfund exposure assessments, intake values for a given pathway should be selected so that the combination of all intake variables results in an estimate of the reasonable maximum exposure for that pathway.

Reasonable Potential Exposure Scenario - A situation with a credible chance of occurrence where a receptor may become directly or indirectly exposed to the chemical(s) of concern without considering extreme or essentially impossible circumstances.

Reasonably Anticipated Future Use - Future use of a site or facility that can be predicted with a high degree of certainty given current use, local government planning, and zoning.

Reasonably Available Control Technology (RACT) - Control technology that is reasonably available, and both technologically and economically feasible. Usually applied to existing sources in nonattainment areas; in most cases is less stringent than new source performance standards.

Reasonably Available Control Measures (RACM) - A broadly defined term referring to technological and other measures for pollution control.

Recarbonization - Process in which carbon dioxide is bubbled into water being treated to lower the pH.

Receiving Waters - A river, lake, ocean, stream or other watercourse into which wastewater or treated effluent is discharged.

Receptor - Any living organism or environmental medium which is exposed to contamination from a discharge.

Receptor Factor (RF) - An indication of the potential for human or ecological contact with site contaminants.

Recharge - The addition of water to an aquifer by natural infiltration or artificial means. Injection of water into an aquifer through wells is one form or artificial recharge.

Recharge Area - A land area in which water reaches the zone of saturation from surface infiltration, e.g., where rainwater soaks through the earth to reach an aquifer.

Recharge Rate - The quantity of water per unit of time that replenishes or refills an aquifer.

Reclamation - (In recycling) Restoration of materials found in the waste stream to a beneficial use which may be for purposes other than the original use.

Recommended Maximum Contaminant Level (RMCL) - The maximum level of a contaminant in drinking water at which no known or anticipated adverse affect on human health would occur, and that includes an adequate margin of safety. Recommended levels are nonenforceable health goals. See Maximum Contaminant Level.

Record - All books, papers, maps, aerial photographs, architectural or engineering drawings, photographs, machine readable materials, or other documentary materials regardless of physical form or characteristics made or received by an agency of the United States Government under Federal law or in conjunction with the transaction of public business and preserved or appropriate for preservation by that agency or its legitimate successor as evidence of the organization, functions, policies, decisions, procedures, operations, or other activities of the Government.

Record of Decision (ROD) - 1) A public document that explains the remedy selection process and which cleanup alternative(s) will be used at National Priorities List sites where, under CERCLA, Trust Funds pay for the cleanup. 2) The official term used by CERCLA and the NCP for the documentation of a final remedial response action decision at an NPL site.

Recoverable - The capability and likelihood of being recovered from solid waste for commercial or industrial use.

Recovered Material - Waste materials and byproducts which have been recovered or diverted from solid waste.

Recovered Resources - Material or energy recovered from solid waste.

Recovery - The residual drawdown after pumping has stopped.

Recycle/Reuse - Minimizing waste generation by recovering and reprocessing usable products that might otherwise become waste (i.e. recycling of aluminum cans, paper, and bottles, etc.).

Red Tide - A proliferation of a marine plankton toxic and often fatal to fish, perhaps stimulated by the addition of nutrients. A tide can be red, green, or brown, depending on the coloration of the plankton.

Redox Potential (Eh) - A measure of the relative tendency of groundwater to accept or transfer electrons (volts).

Redox State - Describes the oxidation-reduction potential of a sample or area, whether the environment is reducing or oxidizing.

Reduction - The addition of hydrogen, removal of oxygen, or addition of electrons to an element or compound. Occurs when another compound is oxidized.

Reductive Dechlorination - Removal of chlorine from a substance by chemically replacing it with hydrogen or hydroxide ions in order to detoxify the substance. The substance is reduced in the process.

Reference Dose, Chronic (RfD) - An estimate (with uncertainty spanning perhaps an order of magnitude or greater) of a daily exposure level for the human population, including sensitive subpopulations, that is likely to be without an appreciable risk of deleterious effects during a lifetime. Chronic RfDs are specifically developed to be protective for long-term exposure to a compound (as a Superfund program guideline, seven years to lifetime). Reference doses are calculated by dividing a quantitative indicator of toxicity (NOAEL or LOAEL) by an uncertainty factor.

Reference Dose, Developmental (RfDdt) - An estimate (with uncertainty spanning perhaps an order of magnitude or greater) of an exposure level for the human population, including sensitive subpopulations, that is likely to be without an appreciable risk of developmental effects. Developmental RfDs are specifically developed to be protective for long-term exposure to a compound (as a Superfund program guideline, seven years to lifetime). Reference doses are calculated by dividing a quantitative indicator of toxicity (NOAEL or LOAEL) by an uncertainty factor.

Relative Percent Difference (RPD) - To compare two values, the relative percent difference is based on the mean of the two values, and is reported as an absolute value, i.e., always expressed as a positive number or zero.

Relative Risk - The grouping of sites or AOCs into High, Medium, or Low categories based on an evaluation of site information using the factors of contamination hazard, migration pathway, and receptors.

Release - 1) As defined by section 101(22) of CERCLA, any spilling, leaking, pumping, pouring, emitting, emptying, discharging, injecting, escaping, leaching, dumping, or disposing into the environment including the abandonment or discarding of barrels, containers, and other closed receptacles containing any hazardous substance, pollutant or contaminant to include oil, but excludes: Any release which results in exposure to persons solely within a workplace, with respect to a claim which such persons may assert against the employer of such persons; emissions from the engine exhaust of a motor vehicle, rolling stock, aircraft, vessel, or pipeline pumping station engine; release of source, byproduct, or special nuclear material from a nuclear incident, as those terms are defined in the Atomic Energy Act of 1954, if such release is subject to requirements with respect to financial protection established by the Nuclear Regulatory Commission under section 170 of such Act, or, for the purposes of section 104 of CERCLA or any other response action, any release of source, byproduct, or special nuclear material from any processing site designated under section 102(a)(1) or 302(a) of the Uranium Mill Tailings Radiation Control Act of 1978; and the normal application of fertilizer. 2) For purposes of the NCP, release also means threat of release.

Remedial Action (RA) - 1) Involves the construction, operation, and implementation of the final cleanup remedy until confirmatory sampling and analysis indicate that cleanup levels have been reached. The final remedy can include removing waste from a site for off-site treatment or disposal, containing the waste on-site or treating the waste on-site. Long-term RAs require continued monitoring, operation, and maintenance for a number of years. 2) As defined by CERCLA those actions consistent with the permanent remedy taken instead of or in addition to removal actions in the event of a release or threatened release of a hazardous substance into the environment, to prevent or minimize the release of hazardous substances so that they do not migrate to cause substantial danger to present or future public health or welfare or the environment. The term includes, but is not limited to, such actions at the location of the release as storage, confinement, perimeter protection using dikes, trenches, or ditches, clay cover, neutralization, cleanup of released hazardous substances and associated contaminated materials, recycling or reuse, diversion, destruction, segregation of reactive wastes, dredging or excavations, repair or replacement of leaking containers, collection of leachate and runoff, on-site treatment or incineration, provision of alternative water supplies, and any monitoring reasonably required to assure that such actions protect the public health, welfare, and the environment. The term includes the cost of permanent relocation of residents, businesses, and community facilities where the President determines that, alone or in combination with other measures, such relocation is more cost effective than and environmentally preferable to the transportation, storage, treatment, destruction, or secure disposition off-site of hazardous substances, or may otherwise be necessary to protect the public health or welfare; the term

includes off-site transport and off-site storage, treatment, destruction, or secure disposition of hazardous substances and associated contaminated materials. 3) For the NCP, the term also includes the enforcement activities related thereto.

Remedial Action Contract (RAC) - An open-ended, long term Navy contract for clean up of specific contaminants.

Remedial Action Operation - Formerly, Long term Operation. Includes operation and maintenance support requirements from start of implementation of a RA; includes monitoring necessary to ensure ongoing RA is successful. RAO should not follow an interim RA for programming purposes.

Remedial Action Process - Provides a careful progression through the four phases of identification, investigation, cleanup and closure.

Remedial Design (RD) - Involves the development of the actual design of the selected cleanup remedy including preparation of all technical drawings, plans and specifications needed to implement the cleanup action.

Remedial Investigations (RI) - A detailed study that includes media sampling to determine the nature and extent of contamination at a site. The RI emphasizes data collection and site characterization including sampling and monitoring as necessary to gather sufficient information to determine the necessity for remedial action and to support the evaluation of remedial alternatives. The RI includes a health assessment which estimates risks to human health and the environment as a result of the contamination. The RI also provides site-specific information for the FS.

Remedial Project Manager (RPM) - Primary point of contact involved in the cleanup of IR sites. RPMs are responsible for taking all response actions to address the release of contaminants. The RPM is the prime contact for remedial actions being taken at sites on the NPL, and for sites not on the NPL but under the jurisdiction of a Federal agency. The RPM coordinates, directs, and reviews the work of other agencies, responsible parties, and contractors to ensure compliance with appropriate regulatory requirements.

Remedial Response - Long-term action that stops or substantially reduces a release or threat of a release of hazardous substances that is serious but not an immediate threat to public health.

Remediation - Cleanup or other methods used to remove or contain a toxic spill or hazardous materials from a Superfund site.

Remedy In Place (RIP) - Indicates that a final remedial action has been constructed, implemented and is operating according to the Remedial Design (RD). An example of this would be a pump and treat system that is installed, operating as designed, and will continue to operate until cleanup levels have been attained. Since operation is on-going, the site cannot be considered as Response Complete (RC).

Remote Sensing - The collection and interpretation of information about an object without physical contact with the object; e.g., satellite imaging and aerial photography.

Removal Action - 1) An action to abate, minimize, stabilize, mitigate, or eliminate the release or threat of release of a hazardous substance; such actions may be taken during any phase of the remedial action process. 2) As defined by CERCLA, the cleanup or removal of released hazardous substances from the environment, such actions as may be necessary taken in the event of the threat of release of hazardous substances into the environment, such actions as may be necessary to monitor, assess, and evaluate the release or threat of release of hazardous substances, the disposal of removed material, or the taking of such other actions as may be necessary to prevent, minimize or mitigate damage to the public health, welfare or the environment, which may otherwise result from a release or threat of a release. The term includes, in addition, but not limited to, security fencing or other measures to limit access, provision of alternative water supplies, temporary evacuation and housing of threatened individuals not otherwise provided for, action taken under section 104(b) of CERCLA, post-removal site control where appropriate, and any emergency assistance which may be provided under the Disaster Relief and Emergency Assistance Act. 3) For the NCP, the term also includes the enforcement activities related thereto. 4) Short-term immediate actions taken to address releases of hazardous substances that require expedited response.

Replicate - Repeated operation occurring within an analytical procedure. Two or more analyses for the same constituent in an extract of a single sample constitutes replicate extract analyses.

Replicate Sample - A sample prepared by dividing a sample into two or more aliquots. Duplicate samples are considered to be two replicates. In cases where aliquoting is impossible, as in the case of volatiles, duplicate samples must be taken for the replicate analysis.

Reportable Quantity (RQ) - 1) Quantity of a hazardous substance that triggers reports under CERCLA. If a substance exceeds its RQ, the release must be reported to the National Response Center, the SERC, and community emergency coordinators for

areas likely to be affected. 2) The specified amount of a hazardous substance that when released in excess of that amount to the environment, must be reported under EPCRA, Section 304.

Representative Sample - A portion of material or water that is as nearly identical in content and consistency as possible to that in the larger body of material or water being sampled.

Representativeness - The degree to which data accurately and precisely represents a characteristic of a population, parameter variations at a sampling point, or an environmental condition. It is a qualitative parameter that is most concerned with the proper design of the sampling program.

Resident, Officer in Charge of Construction (ROICC) - Manages implementation of IR contracts involving construction including removal and remedial actions. Ensures that the contractor meets all specifications and activities are completed in a manner that protects human health, welfare, and the environment.

Residual - Amount of a pollutant remaining in the environment after a natural or technological process has taken place, e.g., the sludge remaining after initial wastewater treatment, or particulates remaining in air after it passes through a scrubbing or other process.

Residual Risk - The extent of health risk from air pollutants remaining after application of the Maximum Achievable Control Technology (MACT).

Residue - The dry solids remaining after the evaporation of a sample of water, sludge, or other material.

Resistance - For plants and animals, the ability to withstand poor environmental conditions or attacks by chemicals or disease. May be inborn or acquired.

Resolution - The separation between peaks on a chromatogram, calculated by dividing the depth of the valley between the peaks by the peak height of the smaller peak being resolved, multiplied by 100. Also termed separation or percent resolution.

Resource - A person, thing, or action needed for living or to improve the quality of life.

Resource Conservation - Reductions of the amounts of solid waste that are generated, reduction of overall resource consumption, and utilization of recovered resources.

Resource Conservation and Recovery Act (RCRA) - RCRA, as amended by the Hazardous and Solid Waste Amendments of 1984 (HSWA), requires the establishment of a management system for hazardous waste (Subtitle C), non-hazardous solid waste (Subtitle D), and underground storage tanks (Subtitle I). RCRA also provides corrective action authority for cleanup of pre-RCRA hazardous waste management units and non-hazardous solid waste management units.

Resource Recovery - 1) The recovery of material or energy from solid waste. 2) The process of obtaining matter or energy from materials formerly discarded.

Resource Recovery Facility - Any facility at which solid waste is processed for the purpose of extracting, converting to energy or otherwise separating and preparing solid waste for reuse.

Resource Recovery System - A solid waste management system which provides for collection, separation, recycling, and recovery of solid wastes, including disposal of nonrecoverable waste residues.

Respiration - Oxidation of compounds to provide energy for cells.

Respiration Rate - Rate of reduction of oxygen concentration due to biological action.

Respiration Test - Test used to provide rapid field measurement of biodegradation rates to determine the potential applicability of aerobic bioremediation at a contaminated site and to provide information for a full-scale treatment system design.

Response - Any investigation, evaluation, decision-making, or implementation step.

Response Action - 1) Generic term for actions taken in response to actual or potential health-threatening environmental events such as spills, sudden releases, and asbestos abatement/management problems. 2) A CERCLA-authorized action involving either a short-term removal action or a long-term removal response. This may include but is not limited to: removing hazardous materials from a site to an EPA-approved hazardous waste facility for treatment; containment or treatment of the waste on-site; identifying and removing the sources of ground-water contamination and halting further migration of contaminants.

Response Complete (RC) - The IRP actions are complete and the site is not a threat to the public health or the environment. It also can mean that the DOD is satisfied that the IRP activities at the site are complete and the proper authorities have been or are being notified, where necessary, of this decision.

Responsiveness Summary - A summary of oral and/or written public comments received during a comment period on key documents, and the response to those comments.

Restoration - Measures taken to return a site to pre-violation conditions.

Restoration Advisory Board (RAB) - An advisory group for the restoration process with members from the public, the Navy, and the regulatory agencies. The purpose of the RAB is to gain effective input from stakeholders on cleanup activities and increase

installation responsiveness to the community's environmental restoration concerns.

Restoration Management Information System (RMIS) - A DOD database used to track information on the status and progress of activities at sites in the DERP. It is used to support the Annual Report to Congress.

Retardation - Preferential retention of contaminants in the subsurface by one or more physical, chemical, or biological factors.

Reverse Osmosis (RO) - A treatment process used in water systems by adding pressure to force water through a semi-permeable membrane, but containing contaminants. Reverse osmosis removes most drinking water contaminants. Also used in wastewater treatment. Largescale reverse osmosis plants are being developed.

Reversible Effect - An effect which is not permanent; especially adverse effects which diminish when exposure to a toxic chemical is ceased.

Riparian Habitat - Areas adjacent to rivers and streams with a high density, diversity, and productivity of plant and animal species relative to nearby uplands.

Rising Head Test - A type of Slug Test where a solid or known volume of water is quickly removed from an aquifer so that the rising head (water level in the well) can be monitored to determine the hydraulic conductivity. Values are often greater than those obtained from a falling head test for the same well.

Risk - A measure of the probability that damage to life, health, property, and/or the environment will occur as a result of a given hazard.

Risk Assessment - 1) Qualitative and quantitative evaluation of the risk posed to human health and/or the environment by the actual or potential presence and/or use of specific pollutants. 2) The process used to determine the threats posed by hazardous substances. Elements include: identification of the hazardous substances present in the environmental media; assessment of exposure and exposure pathways; assessment of the toxicity of the site's hazardous substances; characterization of human health risks; and characterization of the impacts and/or risks to the environment.

Risk Based Concentration (RBC) - Formulated by EPA Region III, RBCs are chemical concentrations corresponding to fixed levels of risk (i.e., a hazard quotient of 1 or lifetime cancer risk of 10^{-6}) in water, air, fish tissue, and soil. RBCs are often used to screen sites not yet on the NPL, respond rapidly to citizen inquiries, and spot-check formal baseline risk assessments. However, RBCs have several limitations. Calculation of RBCs do not include consideration of: 1) transfers from soil to air and groundwater, and 2) cumulative risk from multiple contaminants or media. Therefore, for a single contaminant in a single medium, under standard default exposure assumptions, the RBC corresponds to the target risk or hazard quotient.

Risk Characterization - The last step in the risk assessment process which characterizes the potential for adverse health effects and evaluates the uncertainty involved.

Risk Communication - The exchange of information about health or environmental risks among risk assessors and managers, the general public, news media, interest groups, etc.

Risk Estimate - A description of the probability that organisms exposed to a specific dose of a chemical or other pollutant will develop an adverse response (e.g., cancer)

Risk Factor - Characteristic (e.g., race, sex, age, obesity) or variable (e.g., smoking, occupational exposure level) associated with increased probability of a toxic effect.

Risk Management - The process of evaluating and selecting alternative regulatory and non-regulatory responses to risk. The selection process necessarily requires the consideration of site-specific scientific, legal, economic, social, political, and behavioral factors.

Risk Management Concept - Ensures that higher relative risk sites receive higher priority in the cleanup process; focuses on risk while also evaluating all relevant factors at a particular cleanup site.

Risk Management Priorities - Relative risk, legal agreements, military readiness, stakeholder's concerns, innovative technologies, and cost effective contracting procedures help determine the priority of sites for cleanup within funding limits.

Risk Reduction - The lowering or elimination of the level of risk posed to human health or the environment through interim remedial action, remedial action, or institutional or engineering controls.

Risk Specific Dose - The dose associated with a specified risk level.

Risk-Based Screening Level (RBSL) - Risk-based, site-specific corrective action target levels for chemicals of concern.

River Basin - The land area drained by a river and its tributaries.

Rolling Milestones Provision - Calls for annual updates to agreement milestones based on yearly appropriations; milestones are displayed in a Site Management Plan.

Route of Exposure - The avenue by which a chemical or physical agent comes into contact with an organism (e.g., inhalation, ingestion, dermal contact, injection.)

Runoff - That part of precipitation that flows to surface streams. Direct or over-land runoff is that portion of rainfall which is not absorbed by soil, evaporated, or transpired by plants, but finds its way into streams as surface flow. That portion which is absorbed by soil and later discharged to surface streams is groundwater runoff.

S

Sacrificial Anode - An easily corroded material deliberately installed in a pipe or tank to give it up (sacrifice) to corrosion while the rest of the water supply facility remains relatively corrosion free.

Safe - Condition of exposure under which there is a practical certainty that no harm will result to exposed individuals.

Safe Water - Water that does not contain harmful bacteria, toxic materials, or chemicals and is considered safe for drinking even though it may have taste, odor, color and certain mineral problems.

Safe Yield - The annual amount of water that can be taken from a source or supply over a period of years without depleting that source beyond its ability to be replenished naturally in "wet years".

Salinity - A measure of the amount of salt in water.

Salt Water Intrusion - The phenomenon occurring when a body of salt water, because of its greater density, invades a body of fresh water. This may be caused by a loss of pressure in a fresh water aquifer.

Salts - Minerals that water picks up as it passes through the air, over and under the ground, or from households and industry.

Salvage - The utilization of waste materials.

Sanctions - Actions taken by the federal government for failure to plan or implement a State Improvement Plan (SIP). Such action may include withholding of highway funds and a ban on construction of new sources of potential pollution.

Sand - Unconsolidated rock and mineral particles with diameters ranging from 1/16 to 2 mm

Sand Filters - Devices that remove some suspended solids from sewage. Air and bacteria decompose additional wastes filtering through the sand so that cleaner water drains from the bed.

Sanitary Landfill - See Landfills.

Sanitary Sewers - Underground pipes that carry off only domestic or industrial waste, not storm water.

Sanitary Survey - An on-site review of the water sources, facilities, equipment, operation and maintenance of a public water system to evaluate the adequacy of those elements for producing and distributing safe drinking water.

Sanitary Waste - Wastes, such as garbage, that are generated by normal housekeeping activities and that are not hazardous or radioactive.

Sanitary Water (gray water) - Water discharged from sinks, showers, kitchens, or other nonindustrial operations, but not from commodes.

Sanitation - Control of physical factors in the human environment that could harm development, health, or survival.

Saturated Zone (SZ) - The zone of geological material that occurs below the water table, the pores of which are filled with water (soil moisture equals porosity), and the fluid pressure exceeds atmospheric.

Saturation - The condition of a liquid (water) when it has taken into solution the maximum possible quantity of a given substance at a given temperature and pressure.

Scalar - A measure that only has magnitude, e.g., time and temperature.

Science Advisory Board (SAB) - A group of external scientists who advise EPA on science and policy.

Scientific Notation - A method of writing numbers in terms of powers of ten; e.g., the number 0.000118 would be represented as 1.18×10^{-4} or 1.18E-04 where E stands for exponent, as in the exponent that 10 is raised by.

Scrap - Materials discarded from manufacturing operations that may be suitable for reprocessing.

Screening - Use of screens to remove coarse floating and suspended solids.

Secondary Drinking Water Regulations - Non-enforceable regulations applying to public water systems and specifying the maximum contamination levels that, in the judgment of EPA, are required to protect the public welfare. These regulations apply to any contaminants that may adversely affect the odor or appearance of such water and consequently may cause people served by the system to discontinue its use.

Secondary Materials - Materials that have been manufactured and used at least once and are to be used again.

Sediment (SED) - 1) Material borne and deposited by water. 2) Soil, sand, and minerals washed from land into water, usually after rain. They pile up in reservoirs, rivers and harbors, destroying fish and wildlife habitat, and clouding the water so that sunlight cannot reach aquatic plants. Careless farming, mining, and building activities will expose sediment materials, allowing them to wash off the land after rainfall.

Sediment Yield - The quantity of sediment arriving at a specific location.

Sedimentation - 1) Letting solids settle out of wastewater by gravity during treatment. 2) Solids naturally settling out of slow water in rivers, streams and other water bodies.

Sedimentation Tanks - Wastewater tanks in which floating wastes are skimmed off and settled solids are removed for disposal.

Seepage - Percolation of water through the soil from unlined canals, ditches, laterals, watercourses, or water storage facilities.

Semi-Confined Aquifer - An aquifer partially confined by soil layers of low permeability through which recharge and discharge can still occur.

Semilog Paper - Graph paper having one logarithmic and one arithmetic scale.

Semi-Volatile Organic Compound (SVOC) - 1) Compounds that do not readily volatilize at standard temperature and pressure. 2) Compounds amenable to analysis by extraction of the sample with an organic solvent. Used synonymously with base neutral acid or extractable compounds.

Sensitivity - The slope of the analytical curve, i.e., functional relationship between emission intensity and concentration.

Settleable Solids - Material heavy enough to sink to the bottom of a wastewater treatment tank.

Settling Tank - A holding area for wastewater, where heavier particles sink to the bottom for removal and disposal.

Sewage - The waste and wastewater produced by residential and commercial sources and discharged into sewers.

Sewage Sludge - Sludge produced at a Publicly Owned Treatment Works, the disposal of which is regulated under the Clean Water Act.

Sewage Treatment Plant - Typically consists of a complex of tanks, piping and sludge management areas used to treat sanitary sewage. The unit may use chemical or biological treatment methods.

Sewer - A channel or conduit that carries wastewater and storm water runoff from the source to a treatment plant or receiving stream. "Sanitary" sewers carry household, industrial, and commercial waste. "Storm" sewers carry runoff from rain or snow. "Combined" sewers handle both.

Shelby Tube - A thin-walled, tubular device pressed into an open bore hole to obtain an undisturbed core sample of unconsolidated strata.

Short-Circuiting - Undesirable condition in which air flows unevenly through a biopile due to the existence of low-resistance pathways.

Shredding - Mixing and grinding soil to improve homogeneity and increase permeability.

Shrinking Plume - The situation in which a groundwater plume margin is receding toward the source area and concentrations within the plume are decreasing over time.

Sieve Analysis - Determination of the particle size distribution of soil, sediment or rock by measuring the percentage of the particles that will pass through standard sieves of various sizes.

Significant Deterioration - Pollution resulting from a new source in previously "clean" areas.

Significant Violations - Violations by point source dischargers of sufficient magnitude or duration to be a regulatory priority.

Silt - Sedimentary materials composed of fine mineral particles with diameters ranging from 0.0002 to 0.05 mm.

Silver (Ag) - A naturally occurring metal that is acquired as a by-product during retrieval of other metals like copper, lead, zinc and gold. It is used in surgical prostheses, splints, fungicides, coins, photographic materials, electrical products, paints, and batteries. Silver in water can form various salts or adsorb to various inorganic compounds, or humus and other organic debris. The majority of silver is sorbed by manganese dioxide, which is dependent on the pH and redox state of the local environment. Silver in soil can be mobile depending on the pH, redox state, presence or absence of inorganic and organic compounds that affect sorption.

Sink - 1) Place in the environment where a compound or material collects. 2) A process in which chemicals are removed from the environment or are otherwise made no longer available. For example, the ocean is a sink for CO_2 because crustaceans use a significant amount in building their shells of calcium carbonate ($CaCO_3$). This is very important in modeling the importance of CO_2 in the greenhouse effect.

Site - 1) A single unit where hazardous substances have been deposited, stored, disposed of, or placed. An NPL site is also defined as consisting of all contaminated areas within the area used to define the site, and any other location to or from which contamination from that area has come to be located. The NPL site would include all releases evaluated as part of the HRS analysis. 2) As defined by the Relative Risk Site Evaluation Primer, a site is a discrete area where suspected contamination has been verified, requiring further response action. A site by definition has been, or will be, entered into the Navy Restoration Management Information System (RMIS).

Site Assessment Program - A means of evaluating hazardous waste sites through preliminary assessments and site inspections to develop a Hazard Ranking System score.

Site Closeout (SC) - The final step for IR sites. SC is reached when no further response actions under the IRP are appropriate or anticipated and the regulatory agencies concur. For NPL sites, this step will include following the proper procedure for deletion from the NPL according to the NCP (40 CFR 300.425). Actual SC is the date that the deletion appears in the Federal Register. It is only under unusual circumstances that a site that has been closed out will be reopened.

Site Inspection (SI) - An on-site investigation to determine whether there is a release or potential release and the nature of the associated threats. The SI consists of limited sampling and analysis designed to verify the findings of the Preliminary Assessment. The data collected must also support the decision to continue to the RI/FS phase or remove the site from further investigation.

Site Safety Plan - A crucial element in all response actions, it includes information on equipment being used, precautions to be taken, and steps to take in the event of an on-site emergency.

Siting - The process of choosing a location for a facility.

Skimming - Using a machine to remove oil, other hydrocarbon products, or scum from the surface of water.

Skin Absorption - The introduction of a chemical or toxic product into the body by way of the skin. Skin absorption can occur with no sensation to the skin itself.

Slope Factor (SF) - A plausible upper-bound estimate of the probability of a response per unit intake of a chemical over a lifetime. The slope factor is used to estimate an upper-bound probability of an individual developing cancer as a result of a lifetime of exposure to a particular level of a potential carcinogen.

Sludge - Any solid, semisolid or liquid waste generated from municipal, commercial, or industrial wastewater treatment plant, water supply treatment plant, or air pollution control facility or any other such waste having similar characteristics and effects. It can be a hazardous waste.

Slug Test - A single well test conducted to determine the in situ hydraulic conductivity of low to moderate hydraulic conductivity formations by the instantaneous addition, or removal, of a known volume of water or solid object, to or from a well. The subsequent well recovery is measured.

Slurry - A watery mixture of insoluble matter resulting from some pollution control techniques.

Sodium (Na) - An alkali metal that can form various salts with halogens and metals. Its dissolved concentration in water can be used to indicate salinity. It is very abundant in nature. Not generally considered toxic.

Soil - A mixture of organic and inorganic solids, air, water, and biota which exists on the earth surface above bedrock, including materials of anthropogenic sources, such as slag, sludge, etc.

Soil Gas - Gaseous elements and compounds in the small spaces between particles of the earth and soil. Such gases can be moved or driven out under pressure.

Soil Gas Permeability - A soil's capacity to allow gas flow. The soil gas permeability varies according to grain size, soil uniformity, porosity, and moisture content.

Soil Matrix - Soil as the environmental media containing contaminants.

Soil Type - System of classification of soils based on physical properties.

Soil Vapor Extraction (SVE) - An in situ soil aeration process designed and operated to maximize the volatilization of low-molecular-weight compounds, with some biodegradation occurring.

Sole-Source Aquifer - 1) As defined by the Safe Drinking Water Act, an aquifer that is the only source or potential source of drinking water in an area. 2) An aquifer that supplies 50-percent or more of the drinking water of an area.

Solid Waste - Any garbage, refuse, sludge from a waste treatment plant, water supply treatment plant, or air pollution control facility and other discarded material, including solid, liquid, semisolid or contained gaseous material resulting from industrial, commercial, mining, and agricultural operations, and from community activities, but does not include solid or dissolved material in domestic sewage, or solid or dissolved materials in irrigation return flows or industrial discharges which are point sources subject to permits under section 402 of the Federal Water Pollution Control Act, or source, special nuclear or byproduct material as defined by the Atomic Energy Act of 1954.

Solid Waste Disposal - The final placement of refuse that is not salvaged or recycled.

Solid Waste Management - The systematic administration of activities which provide for the collection, source separation, storage, transportation, transfer, processing, treatment, and disposal of solid waste.

Solid Waste Management Facility - 1) Any resource recovery system or component thereof. 2) Any system, program, or facility for resource conservation. 3) Any facility for the collection,

source separation, storage, transportation, transfer, processing, treatment or disposal of solid wastes including hazardous wastes, whether such facility is associated with facilities generating such wastes or otherwise.

Solid Waste Management Unit (SWMU) - Any discernible unit in which wastes have been placed at any time, regardless of whether the unit was designed to accept solid waste or hazardous waste and from which contaminants may migrate; units to include but not be limited to old landfills, wastewater treatment tanks, container storage areas, surface impoundments, waste piles, land treatment units, incinerators, injection wells, recycling operations, leaking process or waste collection sewers, and transfer stations. SWMUs include any area at a facility at which solid wastes have been routinely and systematically released. Only past releases from SWMUs that also meet the definition of a CERCLA release are eligible for remediation through the IR Program.

Solidification - 1) A treatment process that reduces the mobility of a contaminant by physically restricting its contact with a mobile phase. Solidification is usually accompanied by some form of stabilization. 2) The use of binders for waste bulking to facilitate the handling of liquid wastes.

Solidification and Stabilization - Removal of wastewater from a waste or changing it chemically to make it less permeable and susceptible to transport by water.

Solubility - An upper limit on a chemical's dissolved concentration in water at a specified temperature. Aqueous concentrations in excess of solubility may indicate sorption onto sediments, the presence of solubilizing chemicals such as solvents, or the presence of a non-aqueous phase liquid (such as free floating fuel).

Solvolysis - A reaction in which the solvent serves as the nucleophile.

Sorbed Phase - The thin layer of material held near the surface of soil particles by physical and chemical interactions.

Sorption - The action of soaking up or attracting substances; process used in many pollution control systems. Also the general term for physical and chemical absorption and adsorption.

Source - An area where hazardous substances or petroleum products have been deposited, stored, released, disposed of, or placed.

Special Waste - Items such as household hazardous waste, bulky wastes (refrigerators, pieces of furniture, etc.), tires, and used oil.

Species - A reproductively isolated aggregate of interbreeding organisms.

Specific Conductance - Rapid method of estimating the dissolved solid content of a water supply by testing the capacity of the water to carry an electrical current.

Specific Gravity - The mass of a material as compared with the mass of an equal volume of reference material. Water is the reference material for liquids and solids, while air is the reference material for gases. Specific gravity is dimensionless. If the specific gravity is less than one, the material is lighter than water or gas and will float or rise. If the specific gravity is greater than one, the material is heavier than water or gas and will sink or fall.

Specific Retention (S_R) - The amount of water that will not drain from a unit amount of material by gravity and remains attached to the solids or the material.

Specific Storage Coefficient (S_S) - The volume of water which a unit volume of an aquifer releases from storage or adds to it per unit decline or rise in the average head within the unit volume of the aquifer.

Specific Yield (S_Y) - The amount of water that a unit volume of saturated permeable rock will yield when drained by gravity.

Spike - Known amounts of specific chemical constituents added by the laboratory to selected samples to test the appropriateness and recover efficiencies of specific analytical methods within the actual sample matrices.

Spill Prevention Control and Countermeasures Plan (SPCC) - A contingency plan covering the release of hazardous substances as defined in the Clean Water Act. The SPCC identifies emergency control measures, points of contact, the chain of command, and individual responsibilities within the plan.

Split Spoon Sampler - A hollow, tubular sampling device driven by a 140 pound weight below the depth of drilling to retrieve representative samples of the formation.

Spoil - Dirt or rock removed from its original location, destroying the composition of the soil in the process, as in strip-mining, dredging, or construction.

Spring - Groundwater seeping out of the earth where the water table intersects the ground surface.

Stabilization - 1) A treatment process whereby chemical molecules become chemically bound by a stabilizing agent (e.g., clay, humic materials), reducing the mobility of the contaminant in groundwater, soil, or sediment. 2) Conversion of the active organic matter in sludge into inert, harmless material.

Stabilization Ponds - See Lagoon.

Stable Plume - The situation in which a groundwater plume margin is stationary and concentrations at points within the plume do not change over time.

Standard - 1) The combined application of numeric criteria and narrative policy in order to protect human health and the environment. 2) Norms that impose limits on the amount of pollutants or emissions produced. EPA establishes minimum standards, but states are allowed to be stricter.

Standard Deviation - The square root of the variance of a set of values. A statistic used as a measure of dispersion, or separation, in a distribution of values. Small standard deviations represent closer values and smaller distribution of those values.

Standard Operating Procedure (SOP) - A detailed written description of how a laboratory executes a particular procedure or method. It is intended to standardize the performance of the procedure.

Static Water Level - 1) Elevation or level of the water table in a well when the pump is not operating. 2) The level or elevation to which water would rise in a tube connected to an artesian aquifer, or basin, in a conduit under pressure.

Status of Forces Agreement (SOFA) - An international agreement between a foreign nation and the U. S. defining responsibilities of each signee regarding environmental responsibilities at the host activity.

Steady State - A stable condition that does not change over time or in which change in one direction is continually balanced by change in another.

Step Test - A small to large scale aquifer pumping test where the withdrawal rates are varied over time to assess aquifer characteristics.

Sterilization - The removal or destruction of all microorganisms, including pathogenic and other bacteria, vegetative forms and spores.

Storage - 1) Temporary holding of waste pending treatment or disposal, as in containers, tanks, waste piles, and surface impoundments. 2) When used in connection with hazardous waste, the containment of hazardous waste, either on a temporary basis or for a period of years, in such a manner as not to constitute disposal of such hazardous waste.

Storage Coefficient (S) - A measure of the volume of water contained in an aquifer, related to porosity and aquifer thickness. Expressed as an absolute value normally from 0.00001 to 0.002 for confined aquifers and from 0.02 to 0.35 for water table aquifers.

Storativity - The volume of water an aquifer releases from or takes into storage per unit surface area of the aquifer, per unit change in head. It is equal to the product of specific storage and aquifer thickness. In an unconfined aquifer, the storativity is equal to the specific yield. Synonym - Storage Coefficient.

Storm Sewer - A system of pipes (separate from sanitary sewers) that carries only water runoff from buildings and land surfaces.

Stratification - Separating into layers.

Stratigraphy - The relationship of formation composition, sequence and correlation in layered rocks or sediments.

Stratosphere - The portion of the atmosphere 10 to 25 miles above the earth's surface.

Subchronic - Of intermediate duration, usually used to describe studies or levels of exposure between 5 and 90 days.

Submerged Aquatic Vegetation - Vegetation such as sea grasses that cannot withstand excessive drying and therefore live with their leaves at or below the water surface; an important habitat for young fish and other aquatic organisms.

Substitution - A reaction in which one substituent on a molecule is replaced by another.

Substrate - 1) The base on which an organism lives. 2) A reactant in a microbial respiration reaction (electron donor).

Sulfate Reducer - A microorganism that exists in anaerobic environments and reduces sulfate to hydrogen sulfide.

Sulfur Dioxide (SO_2) - A pungent, colorless, gaseous pollutant formed primarily by the combustion of fossil fuels.

Sump - A pit or tank that catches liquid runoff for drainage or disposal.

Supercritical Water - A type of thermal treatment using moderate temperatures and high pressures to enhance the ability of water to break down large organic molecules into smaller, less toxic compounds. Oxygen injected during this process combines with simple organic compounds to form carbon dioxide and water.

Superfund - The program operated under the legislative authority of CERCLA and SARA that funds and carries out EPA solid waste emergency and long-term removal and remedial activities. These activities include establishing the National Priorities List, investigating sites for inclusion on the list, determining their priority, and conducting and/or supervising the cleanup and other remedial actions.

Superfund Amendments and Reauthorization Act of 1986 (SARA) - In addition to certain free-standing provisions of law, it includes amendments to CERCLA, the Solid Waste Disposal Act, and the Internal Revenue Code. Among the free-standing provisions of law is Title III of SARA, also known as the "Emergency Planning and Community Right-to-Know Act of 1986," and Title IV of SARA, also known as the "Radon Gas Indoor Air Quality Research Act of 1986." Title V of SARA amending the Internal Revenue Code is also known as the "Superfund Revenue Act of 1986."

Superfund Innovative Technology Evaluation (SITE) - EPA program to promote development and use of innovative treatment technologies in Superfund site cleanups.

Support Zone - A safe area at an incident or cleanup for those agencies directly involved in the operation, including the Incident Commander, Emergency Medical Service providers, etc.

Surface Impoundment - Treatment, storage, or disposal of liquid hazardous wastes in ponds.

Surface Runoff - Precipitation, snow melt, or irrigation in excess of what can infiltrate the soil surface and be stored in small surface depressions; a major transporter of nonpoint source pollutants.

Surface Tension - A property of liquids arising from unbalanced molecular cohesive forces at or near the surface, as a result of which the surface tends to contract and has properties resembling those of a stretched elastic membrane.

Surface to Volume Ratio - The surface area of an object relative to its volume.

Surface Water (SW) - All water naturally open to the atmosphere (rivers, lakes, reservoirs, ponds, streams, impoundments, seas, estuaries, etc.) and all springs, wells, or other collectors directly influenced by surface water.

Surfactant - A detergent compound that promotes lathering. Often used as a spill control measure and in remediation systems.

Surrogate - Generally organic compounds which are not target analytes, but are similar to target analytes in chemical composition, extraction, and chromatography, but which are not normally found in environmental samples. These compounds are added to samples to assess analytical performance of a method. They are spiked into all blanks, samples, and spiked samples prior to analysis. Percent recoveries are calculated for each surrogate.

Surrogate Sampling Device - A secondary or substitute sampling device.

Surveillance System - A series of monitoring devices designed to check on environmental conditions.

Suspended Load - Sediment particles maintained in the water column by turbulence and carried with the flow of water.

Suspended Solids - Small particles of solid pollutants that float on the surface of, or are suspended in, sewage or other liquids. They resist removal by conventional means.

Swamp - A type of wetland dominated by woody vegetation but without appreciable peat deposits. Swamps may be fresh or salt water and tidal or non-tidal. See Wetlands.

Synergism - An interaction of two or more chemicals which results in an effect that is greater than the sum of their effects taken independently.

T

Target Analyte List (TAL) - In the Superfund program, a standard list of metals to analyze in samples of various media.

Target Compound List (TCL) - In the Superfund program, a standard list of compounds to analyze in samples of various media. The compounds include Volatile Organics, Semi-Volatile Organics, Pesticides, and Polychlorinated Biphenyls.

Target Levels - Numeric values or other performance criteria that are protective of human health, safety, and the environment.

Taxon - (Taxa pl.) A group of organisms sharing common characteristics in varying degrees of distinction that constitute one of the categories in taxonomic classification, such as species, genus, subspecies, phylum, etc.

Technical Assistance Grants (TAG) - Specific allotments (up to $50,000 for a single grant recipient) are made available by the Office of the President to any group of individuals which may be affected by a release or threatened release at any installation which is listed on the NPL under the NCP. Such grants may be used to obtain technical assistance in interpreting information with regard to the nature of the hazard, RI/FS, ROD, RD, selection and construction of the RA, operation and maintenance, or removal action at such facility.

Technical Review Committee (TRC) - A group of technically cognizant individuals responsible for reviewing technical reports and data for a site. This assemblage should be established after a release or threat of a release has been confirmed at an installation, normally at the end of a Preliminary Assessment or Site Investigation. A TRC shall be established at all installations, whether NPL or non-NPL for the purpose of reviewing and commenting on actions and proposed actions concerning releases or threatened releases at the installation. The TRC shall consist of (but not be limited to) at least one representative from the installation and cognizant Engineering Field Division (EFD), EPA, appropriate state and local authorities, and a public representative of the community involved. It should be noted that the TRC is not an advisory group nor a decision-making body. DON policy is to convert all TRCs to Restoration Advisory Boards (RABs).

Technology Based Limitations - Industry specific effluent limitations applied to a discharge when it

will not cause a violation of water quality standards at low stream flows. Usually applied to discharges into large rivers.

Technology Based Standards - Effluent limitations applicable to direct and indirect sources which are developed on a category-by-category basis using statutory factors, not including water quality effects.

Technology Demonstration - A field-scale demonstration of a technology used to generate performance and cost data.

Tensor - A vector whose magnitude depends on direction, e.g., the wind can gust at 10 knots from the north and 20 knots from the west.

Tentatively Identified Compounds (TIC) - Compounds detected in samples that are not target compounds, internal standards or surrogate standards. Up to 30 peaks are subjected to mass spectral library searches for tentative identification. The assigned identity may be inaccurate, as well as any quantitation.

Teratogen - A substance or agent that causes development of abnormal structures in an embryo or fetus.

Terrace Deposits - Deposits of alluvium (sand, gravel, cobble or clay) which occurs along the margin and above the level of a body of water, marking a former water level.

Terracing - Dikes built along the contour of sloping farm land that hold runoff and sediment to reduce erosion.

Tetrachloroethene (PCE) - A volatile, clear, colorless liquid with an ethereal odor. Its former uses included dry cleaning, degreasing metals, and solvents. Contact can cause dermatitis and irritation, ingestion can cause gastrointestinal irritation. Exposures can result in acute or fatal toxicity. Synonym - Perchloroethylene and Tetrachloroethylene.

Teratogenesis - The introduction of nonhereditary birth defects in a developing fetus by exogenous factors such as physical or chemical agents acting in the womb to interfere with normal embryonic development.

Therapeutic Index - The ratio of the dose required to produce toxic or lethal effects to dose required to produce nonadverse or therapeutic response.

Thermal Pollution - Discharge of heated water from industrial processes that can kill or injure aquatic organisms.

Thermal Treatment - Use of elevated temperatures to treat hazardous wastes. See Incineration, Pyrolysis.

Threshold - The lowest dose of a chemical at which a specified measurable effect is observed and below which it is not observed.

Threshold Level - Time-Weighted Average (TWA) pollutant concentration values, exposure beyond which is likely to adversely affect human health. See Environmental Exposure.

Threshold Limit Value (TLV) - Threshold Limit Values are established by the American Conference of Governmental Industrial Hygienists (ACGIH). TLVs refer to airborne concentrations of a substance and represent conditions under which is believed that nearly all workers may be exposed day after day without adverse effect. TLVs may be expressed in three ways: 1) TLV-TWA - Time weighted average, based on an allowable exposure averaged over a normal 8-hour workday or 40-hour workweek; 2) TLV-STEL - Short-term exposure limit or maximum concentration for a brief specified period of time, depending on a specific chemical (TWA must still be met); and 3) TLV-C - Ceiling Exposure Limit or maximum exposure concentration not to be exceeded under any circumstances (TWA must still be met).

Threshold Planning Quantity - A quantity designated for each chemical on the list of extremely hazardous substances that triggers notification by facilities to the State Emergency Response Commission that such facilities are subject to emergency planning requirements under SARA Title III.

Tidal Marsh - Low, flat marshlands traversed by channels and tidal hollows, subject to tidal inundation; normally, the only vegetation present is salt tolerant bushes and grasses. See Wetlands.

Tillage - Plowing, seedbed preparation, and cultivation practices.

Time-Weighted Average (TWA) - In air sampling, the average air concentration of contaminants during a given period.

To Be Considered (TBC) Requirements - Non-promulgated advisories (such as reference doses or potency factors), criteria, and guidance issued by Federal and state governments and not having the same status as ARARs; supplement ARARs where they do not exist or are insufficient to protect human health and the environment.

Tolerances - Permissible residue levels for pesticides in raw agricultural produce and processed foods. Whenever a pesticide is registered for use on a food or a feed crop, a tolerance (or exemption from the tolerance requirement) must be established. EPA establishes the tolerance levels, which are enforced by the Food and Drug Administration and the Department of Agriculture.

Tonnage - The amount of waste that a landfill accepts, usually expressed in tons per month. The rate at which a landfill accepts waste is limited by the landfill's permit.

Topography - The physical features of a surface area including relative elevations and the position of natural and man-made features.

Total Dissolved Solids (TDS) - All material that passes the standard glass river filter; now called total filterable residue. The term is used to reflect salinity.

Total Excess Cancer Risk - The upper bound on the estimated excess cancer risk associated with exposure to multiple hazardous substances and multiple exposure pathways.

Total Metals - Analyte elements which have been digested prior to analysis.

Total Quality Management (TQM)/Total Quality Leadership (TQL) - A strategy used by DOD to continuously improve performance at every level and in all areas of responsibility. Combines fundamental management techniques, existing improvement efforts, and specialized technical tools under a disciplined structure focused on continuously improving all processes, including products and services.

Total Site Non-Cancer Risk - A calculation of the possibility of non-cancer health effects associated with exposure to all hazardous materials at or from a disposal site at all exposure points for a given receptor. The Hazard Index is a measure of total site non-cancer risk.

Total Suspended Particles (TSP) - A method of monitoring particulate matter by total weight.

Total Suspended Solids (TSS) - A measure of the suspended solids in wastewater, effluent, or water bodies, determined by tests for "total suspended nonfilterable solids." See Suspended Solids.

Toxic Chemical - Any chemical listed in EPA rules as "Toxic Chemicals Subject to Section 313 of the Emergency Planning and Community Right-to-Know Act of 1986."

Toxic Chemical Release Form - Information form required of facilities that manufacture, process, or use (in quantities above a specific amount) chemicals listed under SARA Title III.

Toxic Chemical Use Substitution - Replacing toxic chemicals with less harmful chemicals in industrial processes.

Toxic Cloud - Airborne plume of gases, vapors, fumes, or aerosols containing toxic materials.

Toxic Pollutants - Materials that cause death, disease, or birth defects in organisms that ingest or absorb them. The quantities and exposures necessary to cause these effects can vary widely.

Toxic Release Inventory (TRI) - Database of toxic releases in the United States compiled from SARA Title III section 313 reports.

Toxic Substance - A chemical or mixture that may present an unreasonable risk of injury to health or the environment.

Toxic Waste - A waste that can produce injury if inhaled, swallowed, or absorbed through the skin.

Toxicant - A harmful substance or agent that may injure an exposed organism.

Toxicity - The degree of danger posed by a substance to animal or plant life. See Acute, Chronic Toxicity.

Toxicity Assessment - Characterization of the toxicological properties and effects of a chemical, with special emphasis on establishment of dose response characteristics.

Toxicity Testing - Biological testing (usually with an invertebrate, fish, or small mammal) to determine the adverse effects of a compound or effluent.

Toxicological Profile - An examination, summary, and interpretation of a hazardous substance to determine levels of exposure and associated health effects.

Toxicology - The science and study of poisons control.

trans - In a chiral (directional) organic compound, the prefix trans indicates that the substituted atoms are on opposite sides of the compound. For example, in trans 1,2-Dichloroethene, the chlorine atoms are on opposite sides of the carbon to carbon double bond. The presence or absence of cis or trans compounds can indicate whether biological activity or abiotic, chemical reactions have taken place in the environment. See cis.

Transboundary Pollutants - Air pollution that travels from one jurisdiction to another, often crossing state or international boundaries.

Transient Water System - A non-community water system that does not serve 25 of the same nonresidents per day for more than six months per year.

Transition Coordinators - Serves as the single Federal point of contact for the community to interact with other Federal agencies, gather information, assemble documentation, provide technical assistance, and expedite actions.

Transmissivity (T) - 1) The ability of an aquifer to transmit water. 2) The rate at which water of the prevailing kinematic velocity is transmitted through a unit width of the aquifer under a unit of hydraulic gradient. Normally ranges from 1,000 to 1,000,000 gal/day/ft.

Transpiration - The process by which water vapor is lost to the atmosphere from living plants. The term can also be applied to the quantity of water thus dissipated.

Transportation - The movement of hazardous substances by any mode, including a hazardous liquid pipeline facility, as defined in Pipeline Safety Act. In

the case of a hazardous substance which has been accepted for transportation by a common or contract carrier, any stoppage in transit which is temporary, incidental to the transportation movement, and at the ordinary operating convenience of a common or contract carrier, shall be considered as a continuity of movement and not as the storage of a hazardous substance.

Transportation Control Measures - Steps taken by a locality to improve air quality by reducing or changing the flow of traffic, e.g., public transit, carpools, HOV lanes, etc.

Trash - Material considered worthless or offensive that is thrown away. Generally defined as dry waste material, but in common usage it is a synonym for garbage, rubbish, or refuse.

Trash-to-Energy Plan - Burning trash to produce energy.

Treatability Studies - Tests of potential cleanup technologies conducted in a laboratory. See Bench-Scale Tests and Pilot Tests.

Treated Wastewater - Wastewater that has been subjected to one or more physical, chemical, and biological processes to reduce its pollution of health hazards.

Treatment - 1) Any method, technique, or process designed to remove solids and/or pollutants from solid waste, waste streams, effluents, and air emissions. 2) Methods used to change the biological character or composition of any regulated medical waste so as to substantially reduce or eliminate its potential for causing disease. 3) When used in connection with hazardous waste, any method, technique, or process, including neutralization, designed to change the physical, chemical, or biological character or composition of any hazardous waste so as to neutralize such waste or so as to render such waste nonhazardous, safer for transport, amenable for recovery, amenable for storage, or reduced in volume.

Treatment, Storage, and Disposal Facility (TSDF) - Site where a hazardous substance is treated, stored, or disposed. TSD facilities are regulated by EPA and states under RCRA.

Treatment Technology - Any unit operation or series of unit operations that alter the composition of a hazardous substance, pollutant or contaminant through chemical, biological, or physical means so as to reduce toxicity, mobility, or volume of the contaminated materials being treated. Treatment technologies are an alternative to land disposal of hazardous waste without treatment.

Trend - A direction of movement, course.

Tri Service Environmental Quality Research and Development Strategic Plan (EQ Strategic Plan) - A tri-service program used to track cleanup RDT&E efforts within the services and to address any new needs for specific RDT&E development.

Tributyl Tin (TBT) - A tin-based chemical sprayed on ship hulls to control barnacles and other sea life that attach to hulls. It is extremely toxic to sea life.

Trichloroethene (TCE) - A stable, volatile, colorless liquid with an ethereal, sweet odor. Uses include solvent extraction in industries, solvent for fats, coaxes, resins, oils, and paints; degreasing; dry cleaning; and manufacturing of organic chemicals and pharmaceuticals. It is a strong skin and eye irritant. Acute exposure by inhalation can cause death by cardiac failure. Liver and other organ damage has been implicated through chronic exposure. Synonym - Trichloroethylene.

Trigger Level (TL) - A concentration of a contaminant which, if exceeded, will trigger further evaluation of the site. Navy policy requires the establishment of trigger levels when entering long-term monitoring.

Trihalomethane (THM) - One of a family of organic compounds named as derivative of methane. THMs are generally by-products of chlorination of drinking water that contains organic material.

Trip Blank - Contaminant free water, or appropriate matrix, which accompanies bottles and samples during shipment to assess the potential for sample contamination during shipment. Trip blanks are not opened in the field and are required for Volatile Organic Analysis only.

Troposphere - The layer of the atmosphere closest to the earth's surface.

Trust Fund (Superfund) - A fund set up under the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) to help pay for cleanup of hazardous waste sites and for legal action to force those responsible for the sites to clean them up.

Tuning - A technique used in GC/MS procedures to verify that the instrument is properly calibrated to produce reliable mass spectral information.

Turbidimeter - A device that measures the density of suspended solids in a liquid.

Turbidity - 1) Haziness in air caused by the presence of particles and pollutants. 2) A cloudy condition in water due to suspended silt or organic matter.

Tyvek - Proprietary, nonwoven fabric used for limited-use (disposable) clothing. Excellent protection against particulate contaminants.

U

Ultraviolet (UV) Rays - Radiation from the sun that can be useful or potentially harmful. UV rays from one part of the spectrum (UV-A) enhance plant life and are useful in some medical and dental procedures; UV rays from other parts of the spectrum (UV-B) can cause skin cancer or other tissue damage. The ozone layer in the atmosphere partly shields us from ultraviolet rays reaching the earth's surface.

Uncertainty Factor - In toxicity assessments, a number that reflects the degree of uncertainty that must be considered when the available data are extrapolated to humans.

Unconfined Aquifer - An aquifer containing water that is not under pressure; the water level in a well is the same as the water table outside the well.

Unconsolidated - Sediment that is loosely arranged or unstratified, or whose particles are not cemented together.

Uncontaminated Property - Real property on which no hazardous substances and no petroleum products or their derivatives, including aviation fuel and motor oil, were stored for one year or more, known to have been released, or disposed of.

Underground Injection Control (UIC) - The program under the Safe Drinking Water Act that regulates the use of wells to pump fluids into the ground.

Underground Sources of Drinking Water - Aquifers currently being used as a source of drinking water or those capable of supplying a public water system. They have a total dissolved solids content of 10,000 mg/l or less, and are not "Exempted Aquifers." See Exempted Aquifer.

Underground Storage Tank (UST) - All tanks and attached piping containing regulated substances in which 10% or more of the tank volume (including piping) is beneath the surface of the ground.

Unsaturated (Vadose) Zone - The zone of geologic material that occurs above the water table and capillary fringe, in which the pores are only partially filled with water (soil moisture is less than porosity), and the fluid pressure is less than atmospheric.

V

Vacuum Pump - A unit of mechanical equipment used to increase the pressure in a gas stream and providing a nearly complete vacuum at the suction flange.

Vacuum-Enhanced Pumping - Use of a vacuum pump to lift groundwater, or other liquids or gases, from a well while producing a reduced pressure in the well.

Vadose (Unsaturated) Zone - The zone of geologic material that occurs above the water table and capillary fringe, in which the pores are only partially filled with water (soil moisture is less than porosity), and the fluid pressure is less than atmospheric.

Valence - Number of excess or deficient electrons an atom or molecule may have in a certain state. Indicates the charge of an atom.

Validation - See Data Validation.

Vanadium (V) - A white, soft, ductile metal. It is used in x-rays, manufacture of alloy metals, and as a catalyst for sulfuric acid and synthetic rubber production. It can be mobile in aquatic conditions depending on the state it is in, which depends on the physical and chemical characteristics of the local environment. Industrial exposure can lead to gastrointestinal distress, cardiac and nervous depression, and kidney damage. The liver, adrenals and bone marrow may also be adversely affected.

Vapor Density - The weight of a pure vapor or gas compared with the weight of an equal volume of dry air at the same temperature and pressure. If the vapor density is less than one, the material is lighter than air and may rise. If the vapor density is greater than one, the material is heavier than air and will stay low to the ground.

Vapor Pressure - The pressure exerted by a chemical vapor in equilibrium with its solid or liquid form at a given temperature. It is used to calculate the rate of volatilization of a pure substance from a surface or in estimating a Henry's Law constant for chemicals with low water solubility. The higher the vapor pressure, the more likely a chemical is to volatilize and exist in a gaseous state.

Vapor - The gaseous phase of substances.

Vaporization - Transfer of a chemical substance from the liquid or solid state to the gaseous state.

Variance - 1) Government permission for a delay or exception in the application of a given law, ordinance, or regulation. 2) The sum of the squares of the difference between the individual values of a set of numbers and the arithmetic mean of the set, divided by one less than the number of values.

Vector - A measure that has magnitude and direction, e.g., acceleration of a moving car.

Vegetative Controls - Nonpoint source pollution control practices that involve vegetative cover to reduce erosion and minimize loss of pollutants.

Velocity (V) - A measure of the direction and rate of movement.

Vent Well - A well designed to facilitate injection or extraction of air to/from a contaminated soil area.

Ventilation/Suction - The act of admitting fresh air into a space in order to replace stale or contaminated air; achieved by blowing air into the space. Similarly, suction represents the admission of fresh air into an interior space by lowering the pressure outside of the

space, thereby drawing the contaminated air outward.

Vinyl Chloride (VC) - A volatile chemical compound, used in producing some plastics, that is believed to cause cancer. VC is a breakdown product of chlorinated ethenes like tetrachloroethene, trichloroethene, and dichloroethene.

Viscosity (η) - The property of a fluid describing its resistance to flow. Also known as dynamic viscosity.

Vitrification - The process of immobilizing waste by converting it into a high strength glass or glass-like substance. The process can treat excavated waste or soil in situ. Commonly used to treat radioactive material, and soil contaminated with volatile organics and metals.

Volatile - 1) Any substance that evaporates readily. 2) Evaporating readily at normal temperature and pressures.

Volatile Liquids - Liquids which easily vaporize or evaporate at room temperature.

Volatile Organic Compound (VOC) - 1) Carbon-containing substances released by both natural processes and human activities that readily evaporate; their reaction with nitrogen oxides in the presence of sunlight produces photochemical smog. 2) Compounds amenable to analysis by the purge and trap techniques. Used synonymously with purgable compounds. 3) Any organic compound that participates in atmospheric photochemical reactions except those designated by EPA as having negligible photochemical reactivity.

Volatile Solids - Those solids in water or other liquids that are lost on ignition of the dry solids at 550°C.

Volatilization - To evaporate or cause to evaporate.

Volumetric Tank Test - One of several tests to determine the physical integrity of a storage tank; the volume of fluid in the tank is measured directly or calculated from product-level changes. A marked drop in volume indicates a leak.

W

Washrack - Typically consists of a building or concrete pad designed to wash vehicles such as tanks or aircraft, or other equipment.

Waste - 1) Unwanted materials left over from a manufacturing process. 2) Refuse from places of human or animal habitation.

Waste Characterization - Identification of chemical and microbiological constituents of a waste material.

Waste Exchange - Arrangement in which companies exchange their wastes for the benefit of both parties.

Waste Minimization - Measures or techniques that reduce the amount of wastes generated during industrial production processes; term is also applied to recycling and other efforts to reduce the amount of waste going into the waste stream.

Waste Reduction - Using source reduction, recycling, or composting to prevent or reduce waste generation.

Waste Stream - The total flow of solid waste from homes, businesses, institutions, and manufacturing plants that are recycled, burned, or disposed of in landfills, or segments thereof such as the "residential waste stream" or the "recyclable waste stream."

Wastewater - The spent or used water from a home, community, farm, or industry that contains dissolved or suspended matter.

Water Pollution - The presence in water of enough harmful or objectionable material to damage the water's quality.

Water Quality Criteria - Levels of water quality expected to render a body of water suitable for its designated use. Criteria are based on specific levels of pollutants that would make the water harmful if used for drinking, swimming, farming, fish production, or industrial processes.

Water Quality Standards (WQS) - State-adopted and EPA-approved ambient standards for water bodies. The standards prescribe the use of the water body and establish the water quality criteria that must be met to protect designated uses.

Water Solubility - The maximum possible concentration of a chemical compound dissolved in water. If a substance is water soluble it can very readily disperse through the environment.

Water Storage Pond - An impound for liquid wastes designed to accomplish some degree of biochemical treatment.

Water Table - The surface on which the fluid pressure in the pores of a porous medium is exactly atmospheric. Generally the boundary between the saturated and unsaturated zones, not including the capillary fringe.

Water Table Aquifer - An aquifer which is not confined above, and in which the water level in a well indicates the water table.

Water Treatment Lagoon - An impound for liquid wastes designed to accomplish some degree of biochemical treatment.

Water Well - An excavation where the intended use is for location, acquisition, development, or artificial recharge of groundwater (excluding sandpoint wells).

Watershed - The land area that drains into a stream; the watershed for a major river may encompass a number of smaller watersheds that ultimately combine at a common delivery point.

Weir - 1) A wall or plate placed in an open channel to measure or regulate the flow of water. 2) A wall or obstruction used to control flow from settling tanks

and clarifiers to assure a uniform flow rate and avoid short-circuiting.

Well - A bored, drilled, or driven shaft, or a dug hole whose depth is greater than the largest surface dimension and whose purpose is to reach underground water supplies or oil, or to store or bury fluids below ground.

Well Field - Area containing one or more wells that produce usable amounts of water (or oil).

Well Injection - The subsurface emplacement of fluids into a well.

Well Interference - The situation when the pumping of one well causes drawdown in another well so that the second well has difficulty in pumping water for some time period.

Well Monitoring - Measurement, by on-site instruments or laboratory methods, of the quality of water in a well.

Well Plug - A watertight and gastight seal installed in a bore hole or well to prevent movement of fluids.

Wellhead Protection Area - A protected surface and subsurface zone surrounding a well or wellfield supplying a public water system to keep contaminants from reaching the well water.

Wetlands - Lands transitional between terrestrial and aquatic systems where the water table is usually at or near the surface or the land is covered by shallow water, and having vegetation typically adapted for life in saturated soil conditions. For the purposes of this classification, wetlands must have one or more of the following attributes at least periodically: 1) the land supports predominantly hydrophytes; 2) the substrate is predominantly undrained hydric soil; 3) or the substrate is nonsoil and saturated with water or covered by shallow water at some time during the growing season each year. Examples are swamps, bogs, fens, marshes, and estuaries.

Wildlife Refuge - An area designated for the protection of wild animals, within which hunting and fishing are either prohibited or strictly controlled.

Wood Treatment Facility - An industrial facility that treats lumber and other wood products for outdoor use. The process employs chromated copper arsenate, pentachlorophenol, and/or creosote, all of which are regulated as a hazardous material.

XYZ

Xenobiote - 1) Any biotum displaced from its normal habitat. 2) A chemical foreign to a biological system.

Yard Waste - The part of solid waste composed of grass clippings, leaves, twigs, branches, and garden refuse.

Yield - The quantity of water (expressed as a rate of flows or total quantity per year) that can be collected for a given use from surface or groundwater sources.

Zero Order Reaction - A chemical reaction in which an increase (or decrease) in reactant concentration results in no change in the rate of reaction (as long as some reactant is present).

Zinc (Zn) - A metal that is found naturally in air, soil, water and foods. It is used in brass alloys, bronze, die-casting alloys, galvanizing iron, fungicides, smoke bombs, pharmaceuticals, pennies, and as a protective coating for other metals. Zinc in water can be dissolved or undissolved, depending on the chemical and physical properties of the local environment. The dominant fate of zinc is adsorption to sediments. Zinc in soil is most likely to be strongly absorbed, depending on conditions. Transfer to groundwater from soil is not a dominant process. The soluble forms of zinc are the most toxic forms to aquatic biota. Zinc is an essential nutrient for humans, however, excessive amounts can be harmful. Zinc can reduce "good cholesterol", as well as lead to various gastrointestinal disorders.

Zone of Aeration (Unsaturated) - The zone in which the open spaces in soil or in a rock formation contain air and water. The comparatively dry soil or rock located between the ground surface and the top of the water table.

Zone of Saturation - The area below the water table where all open spaces are filled with water.

Zooplankton - Tiny aquatic animals eaten by fish.

Acronyms

A

A	Flame Atomic Absorption. See Method Qualifier
A	Indicates that a TIC is a suspected aldol-condensation product. See Data Qualifiers
A-106	Office of Management and Budget Circular #A-106
A-E	Architect-Engineer
A^2R^2	Annual Allowance for Requirements Review (Oil Spill Equipment)
AA	Atomic Absorption
AAQS	Ambient Air Quality Standard
ABS	Percent of constituent Absorbed, unitless
ACE	Army Assistant Chief of Engineers
ACGIH	American Conference of Governmental Industrial Hygienists
ACH	Air Changes per Hour
ACHP	Advisory Council on Historic Preservation
AEC	Area Environmental Coordinator
AET	Apparent Effect Threshold
AF	Soil Adherence Factor to skin, mg/cm^2
AFCEE	Air Force Center for Environmental Excellence
Ag	Silver
AIRFA	American Indian Religious Freedom Act
Al	Aluminum
AL	Action Level
AM	Action Memorandum
AMAES	Activity and Management Automated Environmental System
AMRL	Applied Marine Research Laboratory
ANOVA	Analysis of Variance
ANPR	Advanced Notice of Proposed Rulemaking
ANSI	American National Standards Institute
AOC	Area of Concern
AOU	Accelerated Operable Unit
APCD	Air Pollution Control District
APH	Adsorbed-Phase Hydrocarbon
API	American Petroleum Institute
APOW	Annual Plan of Work
APR	Air Purifying Respirator
AQD	Air Quality District
AQUIRE	Aquatic Information Retrieval Database
AR	Administrative Record
ARAR	Applicable or Relevant and Appropriate Requirement
ARF	Administrative Record File
ARPA	Archaeological Resources Protection Act
As	Arsenic
AS	Semiautomated Spectrophotometric. See Method Qualifier
ASCII	American Standard Code for Information Interchange (Computer Language)
ASN(I&E)	Assistant Secretary of the Navy (Installation and Environment)
AST	Aboveground Storage Tank
ASTM	American Society for Testing and Materials
AT	Averaging Time, day
ATSDR	Agency for Toxic Substances and Disease Registry
ATTIC	Alternative Treatment Technology Information Center
AUF	Area Use Factor

AUL	Authorized Use List (HAZMAT)
AV	Automated Cold Vapor AA. See Method Qualifier
AWQC	Ambient Water Quality Criteria
AWQS	Ambient Water Quality Standards

B

b	Saturated thickness of an aquifer
B	Detected in Blank. See Data Qualifiers
Ba	Barium
BACT	Best Available Control Technology
BADT	Best Available Demonstrated Technology
BAF	Bioaccumulation Factor
BBS	Bulletin Board System
BC	Blind Copy
BCF	Bioconcentration Factor
BCP	BRAC Cleanup Plan
BCT	BRAC Cleanup Team
BD/DR	Building Demolition/Debris Removal
BDAT	Best Demonstrated Available Technology
BDL	Below Detection Limits
Be	Beryllium
BEC	BRAC Environmental Coordinator
BEP	bis(2-ethylhexyl)phthalate
bgs	below ground surface
BHC	Benzene Hexachloride (Lindane)
BIOPLUME	Computer model to predict the maximum extent of existing plumes
BLDG	Building
BLM	Bureau of Land Management
BMD	Benchmark Dose
BMP	Best Management Practice
BNA	Base-Neutral and Acid-Extractable orgranic compounds - now SVOCs
BOD	Biochemical/Biological Oxygen Demand
BP	Boiling Point
Br	Bromine
BRA	Baseline Risk Assessment
BRAC	Base Realignment And Closure
BSL	BTAG Screening Level
BTAG	Biological Technical Assistance Group
BTEX	Benzene, Toluene, Ethyl benzene and Xylene
BTU	British Thermal Unit
BTX	Benzene, Toluene and Xylene
BUMED	Bureau of Medicine and Surgery
BW	Body Weight, kg

C

°C	Degrees Celsius
C	Carbon
C	Manual Spectrophotometric. See Method Qualifier
C	For pesticide data, indicates results where identification was confirmed by GC/MS. See Data Qualifiers
Ca	Calcium
CA	Chemcical concentration in Air
CA	Cooperative Agreement
CA	Corrective Action or Cleanup Action
CA	Cost Analysis

CAA	Clean Air Act
CAAA	Clean Air Act Amendments
CAAS	Contractor Advisory and Assistance Services
CADD	Computer Aided Design and Drafting
CAG	Cancer Assessment Group
CAH	Chlorinated Aliphatic Hydrocarbon
CAMU	Corrective Action Management Unit
CAP	Corrective Action Plan
CAS	Chemical Abstract Service (Registry Number)
CATEX	Categorical Exclusion
CAU	Carbon Adsorption Unit
CAX	Cheatham Annex
CBC	Construction Battalion Center
CC	Carbon Copy
CCC	Calibration Check Compounds
Cd	Cadmium
CDC	Centers for Disease Control
CDI	Chronic Daily Intake
CE	Categorical Exclusion
CEAM	Center for Exposure Assessment Modeling
CEC	Civil Engineer Corps
CECOS	Civil Engineer Corps Officer School
CEQ	Council on Environmental Quality
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act, 1980
CERCLIS	CERCLA Information System
CERFA	Community Environmental Response Facilitation Act
CERI	Center for Environmental Research Information
CEU	Continuing Education Units
CF	Conversion Factor
CFB	Circulating Fluidized Bed
CFC	Chlorofluorocarbon
cfm	cubic feet per minute
CFR	Code of Federal Regulations
CFS	Cubic Feet per Second
CH_4	Methane
CHESDIV	EFD Chesapeake Division
CHF	Contaminant Hazard Factor
CI	Confidence Interval
CIH	Certified Industrial Hygenist
CINCLANTFLT	Commander in Chief, Atlantic Fleet
CINCPACFLT	Commander in Chief, Pacific Fleet
Cl	Chlorine
CLEAN	Comprehensive Long-Term Environmental Action, Navy
CLP	Contract Laboratory Program
CMC	Commandant of the Marine Corps
CMI	Corrective Measures Implementation
CMS	Corrective Measures Study
CNB	Commander, Naval Base
CNG	Compressed Natural Gas
CNO	Chief of Naval Operations
CNS	Central Nervous System
Co	Cobalt
CO	Commanding Officer or Contracting Officer
CO	Carbon Monoxide

CO_2	Carbon Dioxide
COC	Contaminant/Chemical of Concern
COC	Chain of Custody
COD	Chemical Oxygen Demand
COE	Corps of Engineers (Army)
COMNAVBASE	Commander, Naval Base
COMNAVFACENGCOM	Commander, Naval Facilities Engineering Command
COMPTRAK	Marine Corps Environmental Compliance Tracking System
CONUS	Continental United States
COPC	Contaminant/Chemical of Potential Concern
COTR	Contracting Officer's Technical Representative
CPF	Carcinogenic Potency Factor
CPR	Cardiopulmonary Resuscitation
CPT	Cone Penetrometer Test
CQC	Construction Quality Control
Cr	Chromium
CR	Consumption Rate, L/day
CRAVE	Carcinogenic Risk Assessment Verification Endeavor
CRDL	Contract Required Detection Limit
CRP	Community Relations Plan
CRQL	Contract Required Quantitation Limit
CRZ	Contaminant Reduction Zone
CS	Chemical concentration in Soil, mg/kg
CS	Confirmation Study
CSF	Carcinogenic Slope Factor
CSM	Conceptual Site Model
CTC	Cost To Complete
CTO	Contract Task Order
Cu	Copper
CV	Coefficient of Variation
CV	Manual Cold Vapor AA. See Method Qualifier
CW	Chemical concentration in Water
CWA	Clean Water Act
CZMA	Coastal Zone Management Act

D

D	Indicates sample was diluted. See Data Qualifiers
D & N	Discovery and Notification
DA_{event}	Absorbed Dose per Event
DAD	Dermally Absorbed Dose
DAF	Dilution/Attenuation Factor
dB	Decibel
DCA	Dichloroethane
DCE	Dichloroethene
DCNO	Deputy Chief of Naval Operations
DCP	Dichlorophenol
DD	Decision Document
DDD	Dichlorodiphenyldichloroethane (Rhothane)
DDE	Dichlorodiphenyldichloroethene
DDT	Dichlorodiphenyltrichloroethane
DEHNR	Department of Environment, Health and Natural Resources
DEMIS	Defense Environmental Management Information System
DENIX	Defense Environmental Network and Information Exchange
DEQ	Virginia Department of Environmental Quality

DER	Department of Environmental Resources
DERA	Defense Environmental Restoration Account
DERP	Defense Environmental Restoration Program
DERPMIS	Defense Env'l Restoration Program Management Information System, now RMIS
DERTF	Defense Environmental Restoration Task Force
DFM	Diesel Fuel Marine
dH/dX	Hydraulic Gradient
DMR	Discharge Monitoring Report
DNAPL	Dense Non-Aqueous Phase Liquid
DNR	Department of Natural Resources
DO	Dissolved Oxygen
d_{oc}	Dissolved Organic Carbon
DOC	Department of Commerce
DOD	Department of Defense
DOE	Department of Energy
DOI	Department of Interior
DOIT	Demonstration of On-site Innovative Technologies
DOJ	Department of Justice
DOL	Department of Labor
DON	Department of the Navy
DOS	Department of State
DOT	Department of Transportation
DPM	Defense Priority Model
DQA	Data Quality Assessment
DQO	Data Quality Objective
DRMO	Defense Reutilization and Marketing Office
DSC	Data Screening Concentration
DSERTS	Defense Site Environmental Restoration Tracking System
DSMOA	DOD/State Memorandum of Agreement
DTSC	Department of Toxic Substances Control
DWS	Drinking Water Standard

E

E	Exposure level
E (inorganic)	Estimated value. See Data Qualifiers
E (organic)	Indicates compound exceeded the calibration range for the GC/MS. See Data Qualifiers
E/P	Evaporation/Percolation
EA	Environmental Assessment
EA	Exposure Area
EBS	Environmental Baseline Survey
EBSL	Environmental Baseline Survey for Lease
EBST	Environmental Baseline Survey for Transfer
EC	Effective Concentration
ECD	Electron Capture Device
ECE	Environmental Compliance Evaluation
ECOC	Ecological Contaminant of Concern
ED	Effective Dose
ED	Exposure Duration, year
EDB	Ethylene Dibromide
EDD	Enforcement Decision Document
EE	Engineering Evaluation
EE/CA	Engineering Evaluation/Cost Analysis
EF	Exposure Frequency, days/year

EFA	Engineering Field Activity
EFA CHES	EFA Chesapeake
EFA MW	EFA Midwest
EFA NW	EFA Northwest
EFA SW	EFA Southwest
EFD	Engineering Field Division
EGW	Existing Groundwater Monitoring Well
Eh	Redox Potential
EI/AA	Environmental Investigation and Alternatives Analysis
EIC	Engineer in Charge
EIS	Environmental Impact Statement
EL	Exposure Level
EM	Electromagnetic
EMAP	Environmental Monitoring and Assessment Program
EMSL	Environmental Monitoring System Laboratory
ENRP	Environmental and Natural Resources Program
EO	Executive Order
EO	Explosive Ordnance
EP	Evaporation, Percolation
EP	Extraction Procedure
EPA	Environmental Protection Agency
EPCRA	Emergency Planning and Community Right-To-Know Act
EPIC	Environmental Photographic Interpretation Center
EPTC	Extraction Procedure Toxicity Characteristic
EQ	Environmental Quality
EQIS	Environmental Quality Information System
ER	Environmental Restoration
ERA	Ecological Risk Assessment
ERE	Ecological Risk Evaluation
ER-L	Effects Range-Low
ER-M	Effects Range-Median
ER, N	Environmental Restoration, Navy
ERP	Emergency Response Plan
ERT	Emergency Response Team
ESA	Endangered Species Act
ESC	Endangered Species Council
ESI	Expanded Site Inspection
ET	Exposure Time, day/year
eV	electron Volts
EV	Event frequency
EXAMSII	Exposure Analysis Modeling System II
EZ	Exclusion Zone

F

F	Fahrenheit
F	Fluorine
F	Furnace AA. See Method Qualifier
FC	Fluorocarbons
Fe	Iron
FEL	Field Equipment Log
FEMA	Federal Emergency Management Agency
FFA	Federal Facility Agreement
FFCA	Federal Facilities Compliance Act
FFS	Focused Feasibility Study

FFSRA	Federal Facility State Remediation Agreement
FI	Fraction Ingested from source, unitless
FID	Flame Ionization Device/Detector
FIFRA	Federal Insecticide, Fungicide, and Rodenticide Act
FIP	Final Implementation Plan
FISC	Fleet and Industrial Support Center
FIT	Field Investigation Team
FLP	Flash Point
FML	Flexible Membrane Liner
FNSI	Finding of No Significant Impact
f_{oc}	Fraction of Organic Carbon present in soil or sediment
FOIA	Freedom of Information Act
FORTRAN	Formula Translation (Computer Language)
FOSL	Finding of Suitability for Lease
FOST	Finding of Suitability for Transfer
FOTW	Federally Owned Treatment Works
FPD	Flame Photometric Detector
FR	Federal Register
FS	Feasibility Study
FSP	Field Sampling Plan
ft	feet or foot
ft/ft	feet/foot
FUDS	Formerly Used Defense Sites
FWPCA	Federal Water Pollution Control Act (CWA)
FWQC	Federal Water Quality Criteria
FWS	(U.S.) Fish and Wildlife Service
FY	Fiscal Year
FYDP	Future Year Defense Plan

G

GAC	Granular Activated Carbon
GAO	General Accounting Office
GC	Gas Chromatography
GC/MS	Gas Chromatography/Mass Spectrometry
GETS	Groundwater Extraction and Treatment System
GIS	Geographic Information System
GLC	Gas Liquid Chromatography
GMP	Groundwater Monitoring Plan
GOCO	Government Owned/Contractor Operated
gpd	gallons per day
gpm	gallons per minute
GPR	Ground Penetrating Radar
$\Delta G_r°$	standard Gibbs free energy
GRA	General Response Action
GSA	General Services Administration
GW	Groundwater
GWM	Groundwater Monitoring
GWPS	Groundwater Protection Standard
GWTP	Groundwater Treatment Plant

H

H	Henry's Law Constant
H	Hydrogen
H_2	Hydrogen Gas
H&S	Health and Safety

HA	Health Advisory
HAP	Hazardous Air Pollutant
HARP	Historic and Archeological Resources Plan
HASP	Health And Safety Plan
HAZMAT	Hazardous Material
HAZWASTE	Hazardous Waste
HAZWOPER	Hazardous Waste Operations and Emergency Response
HB	Hand Boring
HBL	Health Based Limit
HC	Hydrocarbons
HCFC	Hydrochlorofluorocarbon
HDPE	High Density Polyethelene
HEA	Health Effects Assessment
HEAST	Health Effects Assessment Summary Tables
HEED	Health and Environmental Effects Profile
Hg	Mercury
HHEM	Human Health Evaluation Manual
HHS	Housing and Human Services
HHS	Department of Health and Human Services
HI	Hazard Index
HI_T	Hazard Index, Total
HM	Hazardous Material
HM/HW C&M	Hazardous Material/Hazardous Waste Control and Management
HMIS	Hazardous Materials Information System
HMTA	Hazardous Material Transportation Act
HMTR	Hazardous Materials Transportation Regulations
HMTUSA	Hazardous Material Transportation Uniform Safety Act
HNTS	Hydrocarbon National Test Site
HOC	Halogenated Organic Carbons
HPLC	High Performance Liquid Chromatography
HQ	Hazard Quotient
HQ	Headquarters
HRA	Historical Radiological Assessment
HRS	Hazardous Ranking System
HRS2	Revised Hazardous Ranking System
HS	Hazardous Substance
HS	Hydrogen Sulfide
HSL	Hazardous Substance List
HSCD	Hazardous Sites Control Division
HSM	Health and Safety Manager
HSP	Health and Safety Plan
HSSM	Hydrocarbon Screening Spill Model
HSWA	Hazardous and Solid Waste Act Amendments (to RCRA)
HTW	Hazardous and Toxic Waste
HVAC	Heating, Ventilation, and Air Conditioning (System)
HW	Hazardous Waste

I

i	Hydraulic Gradient
I	Intake
IAG	Interagency Agreement
IAS	Initial Assessment Study
IAS	In Situ Air Sparging
ICP	Inductively Coupled Plasma

ICR	Incremental Cancer Risk
ICRE	Ignitability, Corrosivity, Reactivity, Extraction (Characteristics)
ICS	Incident Command System
ID	Inner Diameter
IDL	Instrument Detection Limit
IDLH	Immediately Dangerous to Life and Health
IDW	Investigation Derived Waste
IDWM	Investigation Derived Waste Management
IM	Interim Measures
IP/FP	Implementation Plan and Fee Proposal
IR	Infrared
IR	Ingestion Rate, mg/day, or Inhalation Rate
IR	Installation Restoration
IRA	Interim Remedial Action
IRI	Interim Remedial Investigation
IRIS	Integrated Risk Information System
IRP	Installation Restoration Program
IRTCC	Installation Restoration Technology Coordinating Committee
IS	Interim Status
ISC	Initial Site Characterization
ISV	In Situ Vitrification
ISV	In Situ Volatilization
ITER	Innovative Technology Evaluation Report
IVD	Ion Vapor Deposited
IWA	In Well Aeration
IWTP	Industrial Waste Treatment Plant

J

J	Estimated. See Data Qualifiers
JAG	Judge Advocate General
JE	Joint Engineers
JSA	Job Safety Analysis

K

K	Estimated, biased high (chemical data)
K	Hydraulic Conductivity
K	Potassium
K	Volatilization Constant
K_d	Diffusion coefficient
K_{oc}	Organic Carbon Partition Coefficient
K_{ow}	Octanol Water Partition Coefficient

L

L	Liter
L	Estimated, biased Low (chemical data)
LADD	Lifetime Average Daily Dose
LANTDIV	EFD Atlantic Division
LBP	Lead Based Paint
LC	Liquid Chromatography
LC50	Lethal Concentration
LD	Land Disposal
LD50	Lethal Dose where 50% of animals die
LDR	Land Disposal Restrictions
LDS	Leak Detection System
LEL	Lower Explosive Limit

LEPC	Local Emergency Planning Committee
LFG	Landfill Gas
LFI	Limited Field Investigation
LI	Langelier Index
LLRW	Low Level Radioactive Waste
LNAPL	Light Non-Aqueous Phase Liquid
LOAEL	Lowest Observed Adverse Effect Level
LOD	Limit of Detection
LOEL	Lowest Observed Effects Level
LQAC	Laboratory Quality Assurance Coordinator
LSI	Listing Site Inspection
LTM	Long Term Monitoring
LTMP	Long Term Monitoring Plan
LTO	Long Term Operation
LUFT	Leaking Underground Fuel Tank
LUST	Leaking Underground Storage Tank

M

M	Duplicate injection precision not met. See Data Qualifiers
MAC	Maximum Allowable Concentrations
MACT	Maximum Achievable Control Technology
MANOVA	Multi Variate Analysis of Variance
MBCS	Modified Burmister Classification System
MBTA	Migratory Bird Treaty Act
MCETP	Marine Corps Environmental Training Program
MCL	Maximum Contaminant Level
MCLG	Maximum Contaminant Level Goals
MCO	Marine Corps Order
MCP	Monochlorophenol
MDL	Method Detection Limit
MEK	Methyl Ethyl Keytone
MESO	Marine Environmental Support Office
MF	Modifying Factor
MF	Multiplication Factor
Mg	Magnesium
mg/kg	milligrams/kilogram - equivalent to ppm
µg/kg	micrograms/kilogram - equivalent to ppb
mg/kg/day	milligram/kilogram/day
mg/L (mg/l)	milligrams/liter - equivalent to ppm
µg/L (µg/l)	micrograms/liter - equivalent to ppb
MGD	Million Gallons per Day
MHz	Megahertz
mi^2	square mile
MILCON	Military Construction
mlw	mean low water
mm	millimeter
mmhos/m	millimhos/meter
MMPA	Marine Mammal Protection Act
Mn	Manganese
MOA	Memorandum of Agreement
MOD	Modification (Contracts/Plans)
MOU	Memorandum of Understanding
MP	Melting Point
MPF	Migration Pathway Factor

MPN	Most Probable Number
MPR	Monthly Progress Report
MPRSA	Marine Protection, Research and Sanctuaries Act
MRL	ATSDR Minimal Risk Level
MS	Mass Spectrometry
MS	Matrix Spike
MSD	Matrix Spike Duplicate
MSDS	Material Safety Data Sheet
MSL or msl	Mean Sea Level
MSW	Municipal Solid Waste
MW	Molecular Weight
MW	Monitoring Well

N

n	Porosity
N	Nitrogen
N	Spiked sample recovery not within control limits. See Data Qualifiers
Na	Sodium
NA	Natural Attenuation
NAAQS	National Ambient Air Quality Standards
NAB	Naval Amphibious Base
NABLC	Naval Amphibious Base Little Creek
NACIP	Navy Assessment and Control of Installation Pollutants
NAEC	Naval Aviation Engineering Center
NAGPRA	Native American Graves Protection and Repatriation Act
NAPL	Non-Aqueous Phase Liquid
NAS	Naval Air Station
NAVENVIRHLTHCEN	Navy Environmental Health Center
NAVFAC	Naval Facilities Engineering Command
NAVFACENGCOM	Naval Facilities Engineering Command
NAVOSH	Naval Occupation Safety and Health program
NAVPHIBASE	Naval Amphibious Base
NAVSEASYSCOM	Naval Sea Systems Command
NBS	National Biological Survey
NC	Not calculated as per protocols. See Method Qualifier
NCC	National Climatic Center
NCEA	National Center for Environmental Assessment
NCEL	Naval Civil Engineering Laboratory
NCLP	National Contract Laboratory Program
NCP	National Oil and Hazardous Substances Pollution Contingency Plan
NCWQ	National Commission on Water Quality
ND	Non Detect
NDIR	Nondispersive Infrared Analysis
NDWAC	National Drinking Water Advisory Council
n_e or n_{ef}	Effective porosity for flow
NEBBS	Naval Environmental Bulletin Board System
NECIS	Naval Environmental Compliance Information System
NEESA	Naval Energy and Environmental Support Activity, now NFESC
NEHC	Navy Environmental Health Center
NEPA	National Environmental Policy Act
NEPDB	Naval Environmental Protection Data Base
NEPSS	Naval Environmental Protection Support Service
NERRTS	Navy Environmental Regulatory Requirements Tracking System
NESHAP	National Emission Standard for Hazardous Air Pollutants

NEX	Naval Exchange
NFA	No Further Action
NFESC	Naval Facilities Engineering Service Center
NFPA	National Fire Protection Association
NFRAP	No Further Response Action Planned
NH_4	Ammonium
NHPA	National Historic Preservation Act
Ni	Nickel
NIOSH	National Institute for Occupational Safety and Health
NIST	National Institute for Standards and Technology (formerly NBS)
NITWG	Navy Innovative Technology Working Group
NMFS	National Marine Fisheries Service (U.S. Dept. of Commerce)
NO	Nitric Oxide
NO_2	Nitrite
NO_3	Nitrate
NOAA	National Oceanic and Atmospheric Administration
NOAEL	No Observed Adverse Effect Level
NOEL	No Observed Effects Level
NOHSCP	National Oil and Hazardous Substances Contingency Plan
NOI	Notice of Intent
NON	Notice of Non-compliance
NORTHDIV	EFD Northern Division
NOSC	Naval Ocean Systems Center
NOSC	Naval On-Scene Coordinator
NOV	Notice of Violation
NPDES	National Pollutant Discharge Elimination System
NPL	National Priorities List
NPS	National Park Service (Dept. of Interior)
NR	The analyte is not required to be analyzed. See Method Qualifier
NRC	National Research Council
NRC	National Response Center
NRCS	National Resource Conservation Service (formerly Soil Cons. Service)
NRDA	National Resource Damage Assessment
NRT	National Response Team
NRT	National Resources Trustees
NSDWR	National Secondary Drinking Water Regulations
NSF	National Science Foundation
NSY	Naval Shipyard
NTIS	National Technical Inofrmation Service
NTP	Navy Training Plan
NTR	Navy Technical Representative
NWI	National Wetland Inventory
NWS	Naval Weapons Station

O

O	Oxygen
O_2	Oxygen Gas
O_3	Ozone
O & M	Operations and Maintenance
O & M, MC	Operations and Maintenance, Marine Corps
O & M, N	Operations and Maintenance, Navy
OASN(I&E)	Office of the Assistant Secretary of the Navy (Installations and Environment)
OD	Outside Diameter
ODU	Old Dominion University

ODUSD(ES)	Office of the Deputy Under Secretary of Defense, Environment and Security
OERR	Office of Emergency and Remedial Response
OESO	Ordnance Environmental Support Office
OGC	Office of the General Counsel
OHW	Other Hazardous Waste
OMB	Office of Management and Budget
ONR	Office of Naval Research
OPA	Oil Pollution Act
OPM	Office of Personnel Management
OPNAVINST	Chief of Naval Operations Instruction
OPNAVNOTE	Chief of Naval Operations Note
ORA	Oil Reclamation Area
ORD	Office of Research and Development
ORP	Oxidation-Reduction Potential
OSC	On-Scene Coordinator
OSHA	Occupational Safety and Health Act and/or Administration
OSWER	Office of Solid Waste and Emergency Response
OTI	Office of Technology Innovation
OU	Operable Unit
OVA	Organic Vapor Analyzer
OWS	Oil/Water Separator

P

P	Phosphorous
P	ICP. See Method Qualifier
PA	Pollution Abatement
PA	Preliminary Assessment
PAC	Powdered Activated Carbon
PACDIV	EFD Pacific Division
PAH	Polycyclic Aromatic Hydrocarbons
PAO	Public Affairs Officer
PARCC	Precision, Accuracy, Representativeness, Completeness, Comparability
Pb	Lead
PC	Permeability Constant, cm/hr
PCB	Polychlorinated Biphenyl
PCDD	Polychlorinated Dibenzo-*p*-dioxin
PCDF	Polchlorinated Dibenzofuran
PCE	Perchloroethylene - also tetrachloroethene
PCP	Pentachlorophenol
PCR	Pollution Control Report
PE	Performance Evaluation sample
PEF	Particulate Emission Factor
PEL	Permissible Exposure Limit
PGRS	Plume Groundwater Recovery System
pH	Indicates the hydrogen ion concentration - acidity or basicity
PHA	Public Health Assessment
PHI	Preliminary Hydrogeological Investigation
PIC	Products of Incomplete Combustion
PID	Photoionization Detector
PM	Project Manager
PNA	Polynuclear Aromatic hydrocarbons
PNRS	Preliminary Natural Resource Survey
Po	Polonium
POA&M	Plan of Action and Milestones

POC	Point of Contact
pOH	Indicates the hydroxide ion (OH-) concentration - basicity or acidity
POL	Petroleum, Oil and Lubricant
POTW	Publicly Owned Treatment Works
ppb	parts per billion
PPC	Personal Protective Clothing
PPE	Personal Protective Equipment
PPL	Priority Pollutants List
ppm	parts per million
ppt	parts per thousand
PQL	Practical Quantitation Limit
PR	Preliminary Review
PRAP	Proposed Remedial Action Plan
PRG	Preliminary Remediation Goals
PRP	Potentially Responsible Party
PSC	Potential Source of Contamination
PSE	Preliminary Source Evaluation
PSH	Phase-Separated Hydrocarbon
psi	pounds per square inch
PSI	Preliminary Site Inspection
Pu	Plutonium
PVC	Polyvinyl Chloride
PWC	Public Works Center
PWD	Public Works Department

Q

Q	No analytical result. See Data Qualifiers
Q	Volumetric flow rate
QAC	Quality Assurance Coordinator
QAMIS	Quality Assurance Management and Information System
QAO	Quality Assurance Officer
QAPP	Quality Assurance Project Plan
QA/QC	Quality Assurance/Quality Control
QCI	Quality Control Index
QI	Qualified Individual
QL	Quantitation Limit

R

r	Correlation Coefficient
R	Rejected, data is not usable. See Data Qualifiers
R & D	Research and Development
RA	Remedial Action
RA	Risk Assessment
RAB	Restoration Advisory Board
RAC	Remedial Action Contract
RACER	Remedial Action Cost Engineering and Requirements
RACM	Reasonably Available Control Measure
RACMIS	Remedial Action Contracts Management Information System
RACT	Reasonably Available Control Technology
RAGS	Risk Assessment Guidance for Superfund
RAO	Remedial Action Objective
RAP	Remedial Action Plan
RBC	Risk-Based Concentration
RBCA	Risk Based Corrective Action

RBSL	Risk Based Screening Level
RC	Response Complete
RCRA	Resource Conservation and Recovery Act, 1978
RD	Remedial Design
RD&D	Research, Development, and Demonstration
RDDT&E	Research, Development, Demonstration, Test, and Evaluation
RDT&E	Research, Development, Test, and Evaluation
REAMS	Risk Exposure and Analysis Modeling System
REC	Regional Environmental Coordinator
RF	Receptor Factor
RFA	RCRA Facility Assessment
RfC	Reference Concentration
RfD	Reference Dose, Chronic
RfDdt	Reference Dose, Developmental
RfDi	Inhalation Reference Dose
RfDs	Subchronic Reference Dose
RFI	RCRA Facility Investigation
RFP	Request for Proposal
RGI	Benthic Macroinvertebrate Restoration Goal Index
RI	Remedial Investigation
RIP	Remedy In Place
RMCL	Recommended Maximum Contaminant Level
RME	Reasonable Maximum Exposure
RMIS	Restoration Management Information System
Rn	Radon
RO	Reverse Osmosis
ROD	Record Of Decision
ROICC	Resident Officer In Charge of Construction
RPD	Relative Percent Difference
RPM	Remedial Project Manager
RQ	Reportable Quantity
RR	Rapid Response
RREL	Risk Reduction Engineering Laboratory
RRF	Relative Response Factor
RRSEM	Relative Risk Site Evaluation Model
RSD	Relative Standard Deviation
RTM	Remedial Technical Managers
RVS	Round 1 Verification Step

S

s	value of drawdown
S	Storage Coefficient
S	Sulfur
S (inorganic)	The reported value was determined by the Method of Standard Additions. See Data Qualifiers
S (organic)	Estimated due to surrogate outliers. See Data Qualifiers
SA	Surface Area of exposed skin, cm^2/event
SAB	Science Advisory Board
SACM	Superfund Accelerated Cleanup Model
SAP	Sampling Analysis Plan
SARA	Superfund Amendments and Reauthorization Act, 1986
SB	Soil Boring
SB	Subsurface soil
SC	Site Closeout

SC	Site Characterization
SCAPS	Site Characterization Analysis and Penetrometer System
SCBA	Self-Contained Breathing Apparatus
scfm	standard cubic feet per minute
SCS	Soil Conservation Service
SD	Standard Deviation
SDI	Subchronic Daily Intake
SDL	Sample Detection Limit
SDTS	Spatial Data Transfer Standards
SDWA	Safe Drinking Water Act
Se	Selenium
SEA	Supplemental Ecological Assessment
SEAM	Superfund Exposure Assessment Manual
SECNAV	Secretary of the Navy
SED	Sediment
SEM	Scanning Electron Microscope
SF	Slope Factor
sf/day	square feet/day
SI	Site Investigation
SIMA	Shore Intermediate Maintenance Activity
SITE	Superfund Innovative Technology Evaluation
SMP	Site Management Plan
SNARL	Suggested No Adverse Response Level
SO_2	Sulfur Dioxide
SOFA	Status of Force Agreement
SOP	Standard Operation Procedure
SOUTHDIV	EFD Southern Division
SOW	Scope of Work
SPCC	Spill Prevention, Control, and Countermeasures
SPCC	System Performance Check Compounds
SQL	Sample Quantitation Limit
S_R	Specific Retention
S_S	Specific Storage Coefficient
S/S	Stabilization/Solidification
SS	Site Supervisor
SS	Surface Soil
SSI	Screening Site Inspection
SSL	Sediment Screening Level
SSL	Soil Screening Level
SSO	Site Safety Officer
SSTL	Site Specific Target Level
STEL	Short Term Exposure Limit
STM	Short Term Measure
STORET	USEPA's Computer System for the Storage and Retrieval of Water Quality Data
STP	Site Treatment Plans
SV	Sampling Visit
SVE	Soil Vapor Extraction
SVOC	Semi-Volatile Organic Compounds
SW	Surface Water
SWDA	Solid Waste Disposal Act
SWMU	Solid Waste Management Unit
SWSL	Surface Water Screening Level
S_Y	Specific Yield
SZ	Saturated Zone

T

t	time
T	Titrimetric. See Method Qualifier
T	Transmissivity
TAG	Technical Assistance Grant
TAL	Target Analyte List
TAP	Technical Assistance Program
TAPP	Technical Assistance for Public Participation
TAT	Technical Applications Team
TBC	To Be Considered ARAR
TBD	Technical Background Document
TBT	Tributyltin
TC	Toxicity Characteristic
TCA	Trichloroethane
TCE	Trichloroethene
TCL	Target Compound List
TCLP	Toxicity Characteristic Leaching Procedure
TCLP	Total Concentrate Leachate Procedure
TCP	Trichlorophenol
TDP	Technology Development Plan
TDS	Total Dissolved Solids
TEAM	Total Exposure Assessment Model
TeCP	Tetrachlorophenol
TEF	Toxicity Equivalence Factor
TEO	Total Extractable Organics
TEX	Toluene, Ethylbenzene and Xylene
THC	Total Hydrocarbons
THM	Trihalomethane
TI	Technical Impracticability
TIC	Tentatively Identified Compound
TIO	Technology Innovation Office, EPA
TKN	Total Kjeldahl Nitrogen
Tl	Thallium
TL	Trigger Level
TLV	Threshold Limit Value
TMV	Toxicity, Mobility, Volume
TNT	Trinitrotoluene
TOA	Trace Organic Analysis
TOC	Total Organic Carbon
TOX	Total Organic Halogens
TOX	Total Toxics
TPAH	Total Polycyclic Aromatic Hydrocarbons
TPD	Tons Per Day
TPH	Total Petroleum Hydrocarbons
TPQ	Threshold Planning Quantity
TQL	Total Quality Leadership
TQM	Total Quality Management
TRC	Technical Review Committee
TRI	Toxic Release Inventory
TRPH	Total Recoverable Petroleum Hydrocarbons
TSCA	Toxic Substance Control Act
TSD	Treatment, Storage, and Disposal
TSDF	Treatment, Storage, and Disposal Facility

TSP	Total Suspended Particulates
TSS	Total Suspended (non-filterable) Solids
TVH	Total Volatile Hydrocarbons
TVPH	Total Volatile Petroleum Hydrocarbons
TWA	Time Weighted Average

U

U	Nondetect. See Data Qualifiers
UBST	Underground Bulk Storage Tank
UCL	Upper Confidence Level
UEL	Upper Explosive Limit
UF	Uncertainty Factor
UFL	Upper Flammability Limit
UIC	Underground Injection Control
UIC	Unit Identification Code
ULEV	Ultra-Low Emission Vehicle
UMTRCA	Uranium Tailings Radiation Control Act
USC	Unified Soil Classification
USC	United States Code
USCG	US Coast Guard
USCS	Unified Soil Classification System
USDA	US Department of Agriculture
USEPA	US Environmental Protection Agency
USFS	US Forest Service (of USDA)
USFWS	US Fish and Wildlife Service (of DOI)
USGS	US Geological Survey
USNPS	US National Park Service
UST	Underground Storage Tank
UV	Ultraviolet
UXO	Unexploded Ordnance
UZ	Unsaturated Zone

V

V	Vanadium
VADEQ	Virginia Department of Environmental Quality
VC	Vinyl Chloride
VDEQ	Virginia Department of Environmental Quality
VDWM	Virginia Department of Waste Management
VHWMR	Virginia Hazardous Waste Management Regulations
VF	Volatilization Factor
VOA	Volatile Organic Analytes/Analysis
VOC	Volatile Organic Compound
VP	Vapor Pressure
VP	Verification Phase
VR	Virginia Regulation
V_s	Flow Velocity
VS	Verification Study
VSI	Visual Site Inspection
VSS	Volatile Suspended Solids
VSWCB	Virginia State Water Control Board
VSWMR	Virginia Solid Waste Management Regulations

W

W	Postdigestion spike for Furnace AA analysis is out of control limits, while sample absorbance is less than 50% of spike absorbance. See Data Qualifiers

WESTDIV	EFD West Division
WL	Water table Level
WOE	Weight of Evidence
WQCB	Water Quality Control Board
WQS	Water Quality Standard
WSF	Water Soluble Fraction
WSRA	Wild and Scenic Rivers Act
WTA	Wash Rack/Treatment Area
X	Alternate data flag. See Data Qualifiers
XRF	X-Ray Fluorescence
YZ	
YTD	Year To Date
ZEV	Zero Emission Vehicle
Zn	Zinc
η	Viscosity
*	Duplicate analysis not within control limits. See Data Qualifier
+	Correlation coefficient for Method of Standard Addition < 0.995. See Data Qualifiers